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UNILATERAL CHORIO-RETINAL ATROPHY ASSOCIATED WITH RECURRING DEEP SCLERITIS. (CASE OF BEN WITT KEY)

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EXTENSIVE UNILATERAL CHORIORETINAL ATROPHY WITH RECURRING DEEP SCLERITIS.

BEN WITT KEY, M.D., F.A.C.S.

NEW YORK CITY.

This case, under observation almost five years, had been seen five years before that by another oculist. The etiology was obscure but was supposed to be toxemic. The ophthalmoscopic lesions were associated with severe attacks of scleritis, both confined to one eye. The patient was presented before the Ophthalmic Section of the New York Academy of Medicine, December 18, 1922.

M. P., an Italian man, aged 30 years, was first seen on June 7th, 1918, complaining of repeated attacks of inflammation of the right eye for the prior eleven years. Each attack caused almost complete temporary loss of vision (cloudy), and altho the vision was partly restored after an attack, the repetition had left the eye now quite useless, and shadows only could be detected. The left eye had escaped any involvement of this kind and vision was normal, but the fear that this eye also might become affected led him to seek advice.

A careful history revealed nothing of importance as to his previous medical experience. He had always been strong and well; in fact did not remember having been confined to his bed by any illness of any kind; admitted an attack of gonorrhea—but denied syphilis. He had visited several physicians and oculists; blood tests and other tests had always been negative. Dr. Van Fleet had presented him, on one occasion, before a company of physicians about five years before, at which time the origin of his trouble was studied and discussed.

His father is living and 79 years old; mother died at 74 years of age; grandfather died at 82. He is one of six children, is married and has three healthy children, aged 8 years, 3 years, and one month. His habits are good. No important physical defect could be found on examination.

Ocular examination: Both eyes externally appeared normal in every respect, no reflex irritation whatever; pupils round and regular, the right a trifle larger than the left, but actively responded to light, accommodation, and the consensual reaction.

The ophthalmoscopic examination of the right eye revealed clear and transparent media, the refractive error that of slight hypermetropia; the disc was a good color, slightly elevated (permanent type), the margins well defined and quite regular in outline. The vessels were only slightly attenuated, the arteries near the papilla especially, but also in other more distant parts, appeared beaded and irregular in course; both veins and arteries in other areas seemed to course thru a thin canal or sheath of connective tissue proliferation or organized thin exudate. The peripapillary area was the site of atrophic changes apparently of deep involvement. The retina in part had lost its translucency, with almost complete loss of retinal pigment; here and there were areas of piled up pigment, both of the fine granular, migratory type, and of the mass like, depository type. No hemorrhages, old or new. Thin layers of bluish-white organized exudate, lace like in appearance, could be observed in different parts of the fundus, somewhat obscuring retinal as well as choroidal structures. The choroidal vessels for the most part were atrophic; in fact all degrees of vascular change could be noted from delicate white vascular markings to complete fibrosis, and occurring in large areas of the fundus, only two small areas of normal appearing retina remaining. So varied and yet so general

were these changes distributed over the entire fundus that no one area was characteristic. The macular region was the seat of involvement, small streaks of organized exudate in the deep layers with scattered pigment about them marking the site of a previous inflammation.

The ophthalmoscopic examination of the left eye was negative in every detail.

September 1st, 1920, about two years after his first visit to me, he returned, complaining of gradual oncoming but violent inflammation of the right eye; no pain, no tenderness on palpation, and yet the tearing and redness caused fear of involvement of the fellow eye.

Ocular examination: Right eye,—lids swollen; conjunctiva congested and slightly chemotic; moderate pericorneal injection; also deep sclerotic injection with two well defined violaceous and very vascular tumefactions, 4x6 mm., of the deep sclera in the upper and lower temporal portions of the globe, which tended to become confluent in character with development of the disease process. There was apparent protrusion of the globe, and Hertel's exophthalmometer revealed slight but definite exophthalmos. The iris was congested, the pupil sluggish. The left eye was normal.

The ophthalmoscope showed the vitreous of the right eye filled with innumerable floating particles, neither dust like nor of the large stringy variety, but of moderate size and for the most part similar in appearance. The fundus was entirely obscured by this dense cloud of vitreous particles. The media of the left eye were clear and transparent, and the fundus normal.

Investigation of the cause of these attacks was again made with some thoroness, but without definite results. Laboratory tests, complete blood, chemical blood, and X-ray examinations were negative. Tuberculin injection of one, two and three mg. (T. O.) gave no reaction, local or general. Spinal Wassermann was refused.

Intensive antiluetic treatment together with atropin and hot fomentations modified the course of the disease and brought the eye to a normal and quiet condition in the course of about one month. This, however, not until two other smaller but well defined elevated areas of deep scleral inflammation had occurred in the upper and lower nasal quadrants. With subsidence of the scleritis, there was disappearance of the floating particles in the vitreous, the globe no longer protruded as examination at this time shows. The appearance of the fundus was apparently the same as that observed previous to the attack; no hemorrhagic spots; no proliferating retinal elements. No new exudative or actively inflamed areas could be made out, altho these may have been disguised by the already extensive changes observed previously in a searching examination.

This case is presented for the following reasons:

1. Obscure etiology.
2. Character of the lesions.
3. Course and extent of the disease.
4. Unilateral feature of selectivity.

Altho some form of toxemia—either chemical, microbic or metabolic—is evidently the cause here, its source and type remain hidden. In workers in naphthalin, Van der Hoeve[11] found four cases out of six examined, presented evidences of retinochoroidal changes. The occupation of this man, boot-maker, does not throw any light upon the etiology, neither has he used or been exposed to naphthalin or other chemical agents, so far as he knows.

In the absence of more definite therapeutic indications, biniodid of mercury and potassium iodid were employed with success, and therefore may be regarded in the light of a positive therapeutic test for syphilis. The character of the lesions presented no slate colored appearance of the sclerotic or sclerosing keratitis (tuberculosis?), but rather a densely red, tumor-like (gummatous?), deep involvement of the sclerotic. On the other hand, syphilis may be looked upon with some doubt as the cause, on the ground that his wife gave birth to three apparently healthy children during the past eight years, the last, one month before the last acute attack of scleritis; also on the supporting evidence of repeated negative Wassermann tests. Tuberculosis

may be excluded because of the strong and vigorous type of individual, a clearly negative family and previous medical history, negative physical examination; the lack of chronicity of the attacks of the disease; the fundus lesions and the character of the scleritis are not typical of tuberculosis; also negative to 3 mg. of tuberculin (T. O.); and finally the apparent yielding of the disease to the prescribed medication. If due to a focus of infection, it has not as yet been discovered.

The character of the lesions is interesting, since there appears to have been a recurring inflammation of the entire wall of the globe, perhaps affecting the choroid and retina by contiguity rather than directly, altho the fundus picture may indicate one or the other process. Not only has the deep scleritis been active anteriorly (ciliary), but also a posterior as well as an equatorial involvement has occurred, characterized by the proptosis at the time of the acute attack, also by the multiple lesions even about the nervehead itself found in the fundus picture. However, it is quite obvious that previous to the attacks of sclerouveitis there may have occurred directly an extensive chorioretinitis, which would explain the variety of lesions in the fundus and especially the juxtapapillary changes. In Botteri's[2] case, there was a large sclerotic nodule close to the optic nerve.

Just as interesting and as unusual as the character of the lesions, is the course and extent of the disease. Here it is certain that repeated attacks of violent scleritis have taken place in a single eye, with adjacent atrophy of the choroid and retina, but no attenuation of the sclera at the site of the cicatrix has taken place, as the case presented shows. There is no ectasia of the sclera, no gibbous protrusion, no expansion of the whole surface, no myopia (small degree of hypermetropia on the other hand), no deformity of the globe, no pigmentation of the sclera. The cornea is clear and transparent; the iris is normal and active (tho during the attack of scleritis there was moderate congestion and sluggish reaction); no synechia; only a few vitreous particles remain; and intraocular tension is normal. In other words, none of the complications of recurring deep scleritis remains, except a peculiar atrophy of almost the entire choroid and retina from the extreme periphery of the fundus to the optic nerve margins. No similar case report have I been able to find in the literature of the subject reviewed over a period of the past twelve years.

Delmiro de Caralt,[3] in writing on the morphology and pathogenesis of scleritis, considers that the classification of de Wecker has retarded for many years the knowledge of affections of the sclerotic, which are usually the secondary expression of disturbances of the uveal tract. The author refers to the papulo-ampullary forms as due to many causes, fairly well recognized. Of the subacute type, his statistics show sixty-three of the nodular form, and only three of the gummatous type.

In secondary scleritis connected with chronic uveal inflammation, Fuchs[7] finds the tissue infiltrated with lymphocytes and plasma cells; polynuclear cells being rare. The openings to the canal of Schlemm and the anterior vessels are always infiltrated. Those of the vortex veins and posterior ciliary arteries less so. In the episcleral tissue the infiltration continues along the vessels into the capsule of Tenon, and about the insertions of the tendons.

Chance[4] reports a case of extensive choroidal atrophy in a man, 70 years of age, the etiology undetermined. The appearances in Jackson's[9] case supports the view of Stock and others that a large proportion of the cases of choroidal atrophy are due to tuberculosis.

Numerous cases of tubercular deep scleritis have been reported, but almost invariably the disease is observed to invade the anterior segment of the globe, with definite destructive changes in the iris, sclerocornea,—hypertension. Collomb[5] reports an interesting case of tubercular deep scleritis of this type (the patient admitted syphilis). A. Knapp[10] reports two cases of tubercular scleritis. One was a woman, aged 28 years, with a history of recurrent attacks in both eyes for eight years time, sclerosing keratitis;

the other, a woman, aged 48 years, with severe iridochoroiditis and scleritis, anterior scleral ectasia, hypertension.

On the other hand, syphilitic deep scleritis usually manifests itself by a sclerouveitis, or by gummatous scleritis with contiguous involvement of the choroid and retina. Blake,[1] Wilder,[12] Glavan[8] (2 cases), and many others have reported such cases, and the observation is conclusive in almost every case. There is less iris involvement, no sclerocorneal lesion, and rarely hypertension. In other words it is confined more especially to the posterior rather than to the anterior segment of the globe.

Wootton[13] reports a case of extensive degeneration of the choroid and retina of both eyes in a woman, aged 24 years, with marked vessel changes and scattered pigmentation. The optic atrophy and vascular degeneration were regarded as secondary to the degenerative changes in the retina. The Wassermann was strongly positive. This case is unusual and interesting, but especially so when viewed in sharp contrast to my case reported above, where a deep scleritis by contiguous or coexisting inflammation of the uvea has painted the picture of chorioretinal atrophy extending over the entire fundus, without destruction of the outer layers of the retina and without optic nerve involvement.

Limitation of more destructive changes and complications in my case may have been due to the fact that prompt antiluetic treatment was perhaps administered at the onset of each acute attack of the disease. On the other hand, it seems reasonable to regard the scleral involvement as being of a violent type, the term, *violent*, being used advisedly in contradistinction to, but admitting, *deep* scleritis, because of the absence in this case of those destructive changes in the cornea, uvea and sclera itself which may result in ectasia, seclusio pupillae, chronic uveitis, high myopia, hypertension, etc., and which are known to follow upon recurring deep scleritis. The location of the fundus lesions and the character of the acute attack, certainly indicate that a posterior scleritis had been principally active here. That this has affected the uvea by contiguity, or both scleritis and uveitis were part of the same inflammatory process, is demonstrated by the densely cloudy vitreous coincident with the acute scleritis, its prompt disappearance on subsidence of the scleritis, and the peculiar type of chorioretinal atrophy revealed in the fundus. The character of the lesions in the fundus would indicate a deep (postretinal) inflammatory element, the superficial layers of the retina showing loss of translucency, the posterior layers of which are almost entirely without pigmentation, this layer being principally involved, the pigment scattered and deposited in no manner characteristic of that commonly observed in localized chorioretinal atrophy. The retinal vessels are only slightly attenuated, and the optic nerve quite normal in color, level and capillarity. And yet, explanation of this delimited involvement may be found merely in the more certain knowledge of the true etiologic factor.

In explanation of the seat of the primary focus in cases of chorioretinitis, Fuchs[6] has found thru histologic study, that in purely retinal lesions, the pigment epithelium and choroid are intact, but the outer retinal layers are found destroyed. Altho these changes are found alongside chorioretinal lesions, the origin of the inflammation is believed to have started in the retina. In most cases of chorioretinitis, however, the disease begins in the choroid, the choroid and pigment layer of the retina showing degenerative changes, finally producing a picture similar to that of the other class of cases.

As for the unilateral feature of selectivity in this case report, the selective action of a toxemia for the right eye of this patient over a period of fifteen years is worthy of note. Deep scleritis is known almost invariably to affect both eyes; it occurs in young people (but not in children), and is more frequently observed in females.

What defensive mechanism against, or individual resistance to this toxemia is possessed by the left eye that it should have escaped involvement? Is it a mere coincidence? On the other hand, is there a peculiar susceptibility of the right eye to this toxemia? Or does there exist an

anatomic relationship of blood vessel or lymph channel, which permits attack or direct infection (bacterial or toxic) of the right eye? May a focus of infection in some nearby recess (tooth, sinus, tonsil, etc.) be responsible? The reciprocal action of pathologic processes in the mouth and eye is well known, and is explained by continuity of the bones and by common arteries, veins, lymph vessels and nerves.

The error of refraction is small and about the same as that of the fellow eye. Furthermore, the element of strain or use of the eye can be eliminated as a factor contributing to the susceptibility of the host, since the eye has been practically blind for the past twelve years.

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BITEMPORAL CONTRACTION OF THE FIELDS OF VISION IN PREGNANCY.

MAUD CARVILL, M.D.

BOSTON, MASS.

Bitemporal contraction of the fields has been observed in pregnant women by various writers, for the last twenty years. It has been associated with the normal enlargement of the hypophysis during pregnancy. Its frequency, importance and tendency to become more marked in successive pregnancies, are here demonstrated by observations upon one hundred pregnant women, at the New England Hospital for Women and Children. Read before the New England Ophthalmological Society, March 20, 1923.

Dr. Harvey Cushing[1], in his monograph on "The Pituitary Body and Its Disorders" published in 1912, states, "Hypertrophic changes in the glands, with cellular hyperplasia, have been noted by Compte (1898); Launois and Muln (1903); and others. Furthermore, that functional alterations occur, comparable to those which obviously affect the thyroid, has been surmised from the remarkable cases which, from time to time, have been recorded, of fleeting bitemporal hemianopsias during the last weeks of the multiparous gravid state.

Prof. August von Reuss[2], in 1908, described an interesting case of optic atrophy with bitemporal hemianopsia, occurring in a woman who had been pregnant sixteen times between the ages nineteen to thirty-nine, which he diagnosed as due to hypertrophy of the hypophysis of pregnancy. He cites similar cases reported by Groenow in 1904; Bellizona and Tridonani[3], in 1903; Berger-Loewy and Runge in 1906; Bistis in 1904; Puyo in 1905. None of these authorities surmised these cases were due to an enlarged hypophysis of pregnancy, but attributed the condition to toxemia, autointoxication, vasomotor disturbance or some allied cause.

At an International Congress of Ophthalmology held in Washington in 1922, Prof. C. E. Finlay[5] of Havana, Cuba, reported the results of examining the visual fields of thirty-one women awaiting confinement at the General Calixto Garcia Hospital. From an examination of the visual fields of these patients, he found that out of the thirty-one cases only nine could be considered approximately normal, the remainder showing changes in the na-

ture of a temporal contraction; of these, 8 were slight, 9 moderate, and 7 pronounced. His conclusion was: "That during pregnancy there often occurs, as a result of the normal hypertrophy of the pituitary gland in connection with this state, a compression of the chiasm which manifests itself by changes in the visual fields in the nature of a bitemporal contraction, which varies in degree according to the amount of compression suffered, this depending on the corresponding amount of hypertrophy and on the anatomic peculiarities of the case, which may favor or hinder the compression."

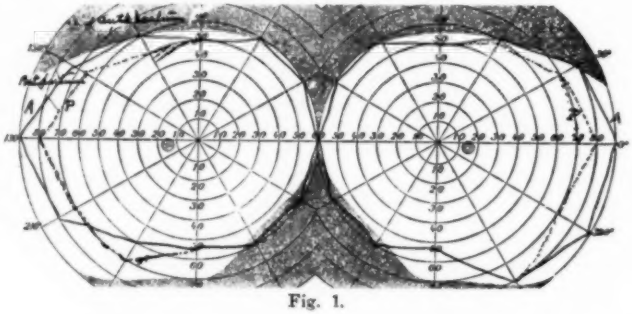

Fig. 1.

In order to establish these facts, two points have to be proved:—first, that bitemporal contraction of the visual field is fairly constant in the normal pregnant woman; second, that enlargement of the pituitary body is also a fairly constant phenomenon in the normal pregnant woman. As to the latter point, in 1908 Erdheim and Stumme[6] demonstrated the incidence of this enlargement by the examination of 150 subjects, and they showed that in women who had never been pregnant the average weight of the hypophysis was 61.8 c.g., the maximum 75. c.g.; in primiparae the average was 84.7 c.g., the maximum 110 c.g.; in multiparae the average was 106 c.g., the maximum, 165 c.g. The conclusive studies of these authors prove the question of functional hypertrophy of the hypophysis beyond the stage of conjecture. These authors further state that after parturition there occurs a subsidence, the involution being complete at the termination of lactation. With a succeeding pregnancy a further augmentation takes place. They state the increase in size during pregnancy is chiefly in the vertical and lateral diameters due to enlargement of the anterior lobe. The chief cells undergo remarkable changes during pregnancy. They increase greatly in number, becoming even more abundant than the acidophilic cells. They increase also in size and their cytoplasm becomes slightly acidophilic. After the termination of pregnancy they resume their old propreties, but the increase in number is never entirely lost. The process is repeated at the next pregnancy.

To establish that bitemporal contraction of the visual fields is fairly constant in the normal pregnant woman is just a question of collecting a sufficient number of fields from a sufficient number of independent sources to establish or disprove the thesis.

At the New England Hospital for Women and Children, thru the courtesy of the Maternity Department, we have made a study of a group of women in the later weeks of normal pregnancies, to learn to what extent the hypertrophy of the hypophysis occurring in their pregnancies affects the visual field. We have examined the fields of 100 gravid women, the progress of whose pregnancies was otherwise normal, i.e., there were no complications. Their blood pressures, urines, and general condition were considered normal by the internist. Their fundi were normal, and their vision was of normal acuity. These women were of good intelligence, many of them former students in our high schools, and some graduates therefrom. Their central fixation was steady and their peripheral tests very accurate. The definiteness of the delineation of the fields has impressed us. In many cases the variation of a degree in the position of the test object was a definite question of seeing it or

not seeing it. The fields were taken by daylight by a northerly exposure, with a perimeter with a radius of 26 c.m., using a 5 mm. opaque white test object.

Twelve of these 100 cases we are not including, as their last examination was taken more than three weeks before parturition and at that time their fields were normal. It is interesting to note that one of this group is a woman of 39 years of age and in her tenth pregnancy. We think several of these cases would have shown contracted fields if examined a few days before parturition, as some of our fields taken 14 days postpartum showed a greater amount of contraction than those of the same patient taken antepartum.

Fields showing more contraction of fields postpartum than antepartum. In these charts:

———— Indicates first fields.
..... Indicates later antepartum fields.
— — — Indicates postpartum fields.

Of the remaining 88 cases, only five, or 5.6 per cent, could be considered normal; two of these, it is of interest to note, were respectively 33 and 39 years of age, and in their seventh pregnancy, and the fields were taken on the day of parturition in each case. The remaining 83 cases, or 9.4 per cent, showed bitemporal contractions of greater or less extent; 22 cases, or 25

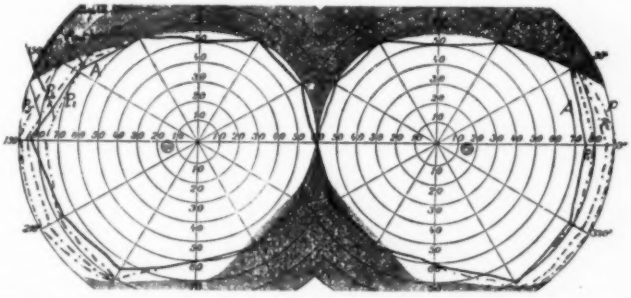

Fig. 2.—Fields M.R.A., antepartum, 2 days. P1, postpartum, 13 d. P2, 16 d. P3, 23 d.

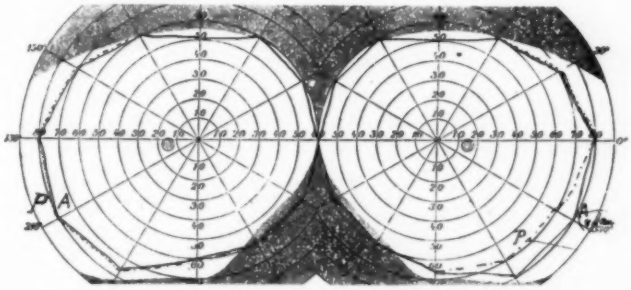

Fig. 3.—Fields H.R., A, antepartum 8 d. P, postpartum 11 d.

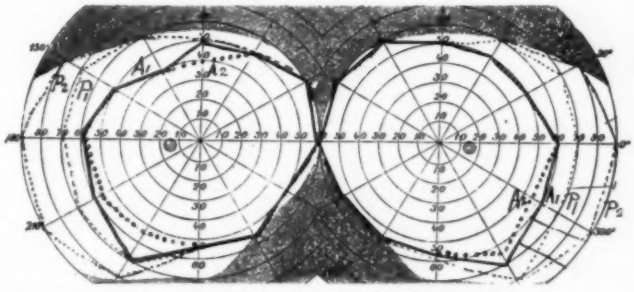

Fig. 4.—M.L.B., A1, antepartum, 14 d. A2, 7 d. P1, postpartum, 14 d. P2, 29 d.

per cent, showed marked contraction (20° or more); 50 cases, or 56.5 per cent, showed moderate contraction (10° to 20°); 11 cases, or 12.5 per cent showed contraction (less than 10°). Five degrees was the minimum regarded as a definite contraction. The cases we have noted in the literature refer to the multiparous gravid state. In our group 45 cases, or 51 per cent, were primiparae.

In the 51 cases we have examined postpartum all but two recovered normal fields.

In our series of 100 cases, one woman, an American, 39 years of age, was in her XII pregnancy, and one, an Englishwoman, 38 years of age, in her XIV pregnancy. Both these cases showed marked contraction of the temporal fields. Their fields had not returned to normal two weeks after parturition, and in the case of the patient in her XIV pregnancy, the contraction of the temporal was practically the same when taken eight months postpartum, thus showing a permanent contraction.

In these two cases, as a matter of record, radiographic examinations of the sella turcica were made by Dr. A. S. MacMillan, who reported negative findings.

FIELDS SHOWING MODERATE CONTRACTION AND RETURN TO NORMAL.

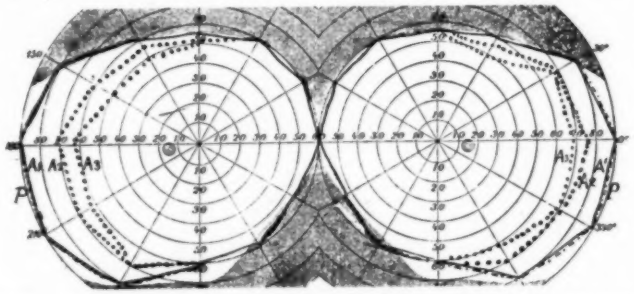

Fig. 5.—M.T., A1, antepartum, 42 d and 29 d. A2, 21 d. A3, 1 d. P, postpartum 14 d.

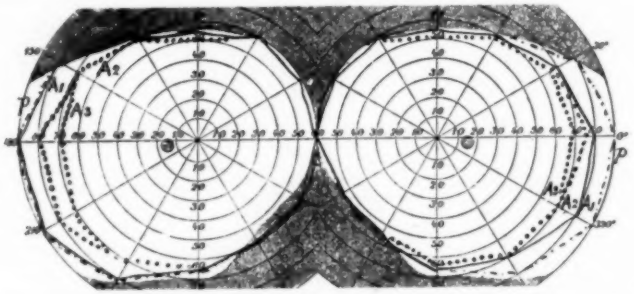

Fig. 6.—D., A1, antepartum, 62 d. A2, 48 d. A3, 39 d. P, postpartum, 12 d.

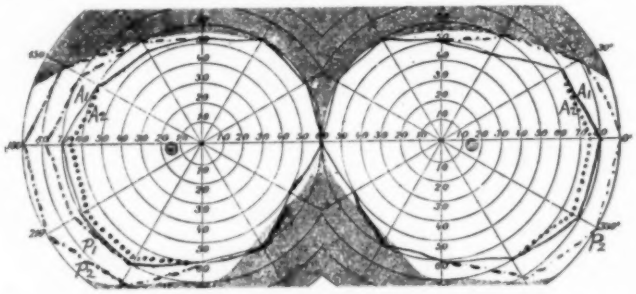

Fig. 7.—M., A1, antepartum, 25 d. A2, antepartum, 1 d. P1, postpartum, 14 d. P2, 17 d.

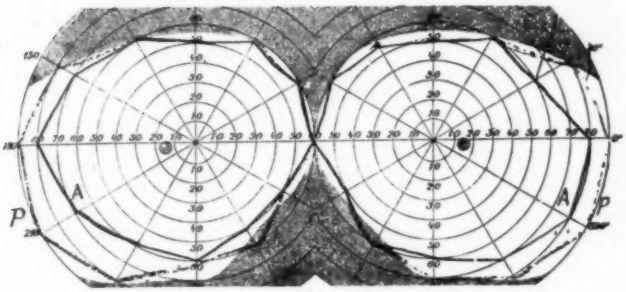

Fig. 8.—M.D. A, antepartum 3 d. P, postpartum 17 d.

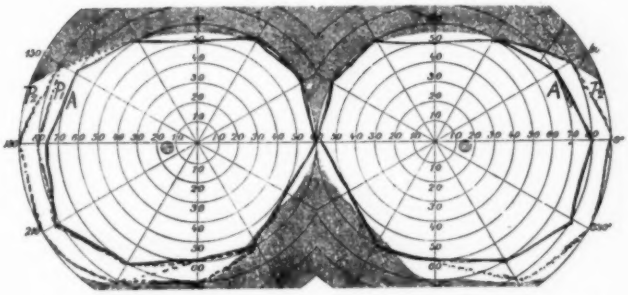

Fig. 9.—F., A, antepartum 5 d. P1, postpartum 13 d. P2, 29 d.

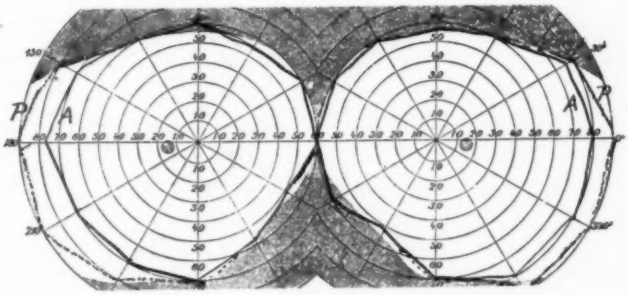

Fig. 10.—E., A, antepartum, 38 d. P, postpartum 15 d.

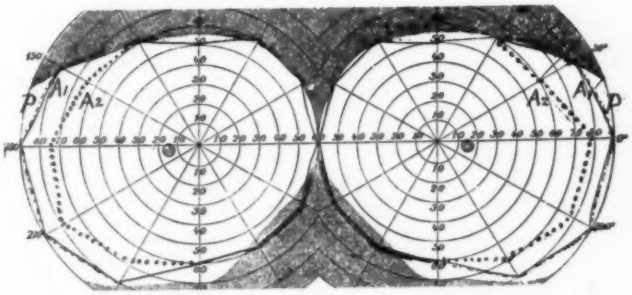

Fig. 11.—G., A1, antepartum 32 d. A2, 18 d. P, postpartum 9 d.

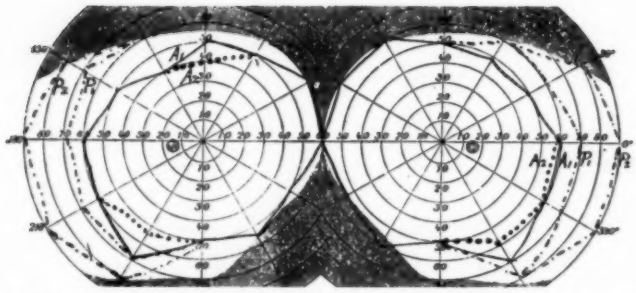

Fig. 12.—M.L.B., A1, antepartum 14 d. A2, 7 d. P1, postpartum 14 d. P2, 29 d.

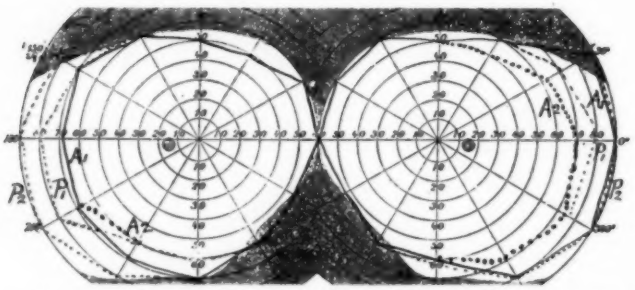

Fig. 13.—C.C., A1, antepartum 21 d. A2, 3 d. P1, postpartum 12 d. P2, 29 d.

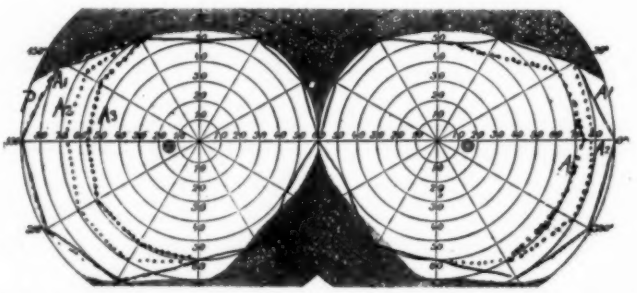

Fig. 14.—E.S., A1, antepartum 47 d and 29 d. A2, 16 d. A3, 2 d. P, postpartum 12 d.

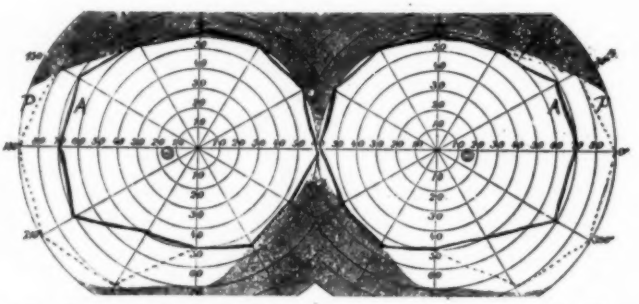

Fig. 15.—N.J., A, antepartum 30 d and 13 d. P, postpartum 18 d. Normal.

FIELDS SHOWING FAILURE RETURN TO NORMAL.

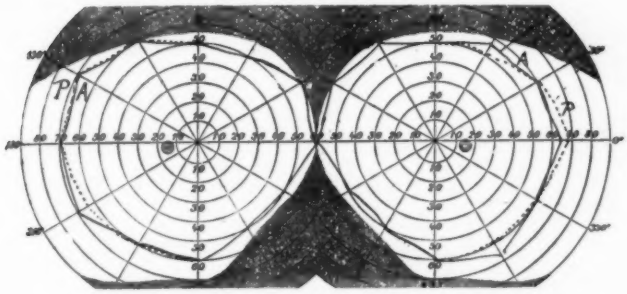

Fig. 16.—A.F., A, antepartum 66 d. P, postpartum 8 months.

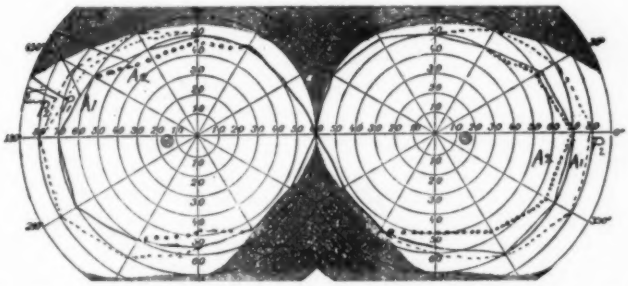

Fig. 17.—C.R., A1, antepartum 18 d. A2, day of confinement. P1, postpartum 11 d. P2, 14 d.

FIELDS SHOWING MARKED CONTRACTIONS.

Table I.

Showing the Varying Degree of Contraction Arranged by Gravid State.

Contraction	Pregnancies I	II	III	IV	V	VI	VII	VIII	IX	XII	XIV
25.0% Marked (20° or over)	14	3	0	2	0	1	0	0	0	1	1
56.5% Moderate (10°-20°)	23	11	3	4	1	2	4	1	3	..	..
12.5% Slight (under 10°)	6	0	2	0	0	0	1	0	0	..	..
5.6% Normal	2	1	0	0	0	0	2	0	0	..	..
Total	45	15	5	6	1	3	7	1	3	1	1

Table II.

Showing Varying Degrees of Contraction of Fields Arranged by Age of Patient

Contraction	Age 18	19	20	21	22	23	24	25	26	27	28	29	30	30-35	35-40	40-44
Marked	1	1	1	1	..	4	4	3	2	1	..	..	1	1	2	2
Moderate	..	2	5	1	2	6	4	2	5	1	3	4	2	8	1	5
Slight	1	1	..	..	..	1	1	1	..	1	..	1	..	1	..	1
Normal	..	..	1	..	1	..	..	..	..	..	..	1	..	1	1	1

Table III.

Showing Fields in Weeks Preceding Parturition.

Period	Contracted	Marked	Moderate	Slight	Normal
One Week Before	79	23	48	8	3
Two Weeks Before	53	14	35	4	..
Three Weeks Before	32	8	21	3	..
Four Weeks Before	20	6	13	1	..
Five Weeks Before	18	5	12	1	..
Six or More Weeks Before	..	4	5	1	..

Table IV.

Showing Fields Returned to Normal—Arranged by Number of Days Postpartum

Days Postpartum	9	10	11	12	13	14	15	16	17	18	19	20 or more
Fields	1	2	4	4	4	9	5	6	6	3	1	4

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TUBERCULOSIS OF THE EYE; ITS DIAGNOSIS AND TREATMENT BY TUBERCULIN.

WILLIAM E. GAMBLE, M.D.

CHICAGO, ILL.

This is a general survey of ocular tuberculosis in its especial relation to tuberculin used for diagnostic and therapeutic purposes. The writer finds that in ocular tuberculosis the remedy has stood the test of twenty years' experience.

Ocular tuberculosis is a chronic disease, comparable to the disease elsewhere in the body. Tuberculosis of the eye in the Middle West is infrequent; while in European cities it is comparatively common. It is found in ambulatory cases; in office practice and in out door dispensary service, commonly without evidence of the disease elsewhere. Tuberculosis, well developed, in other parts of the body seems to make the eye comparatively immune. I attended the wards of a tuberculosis hospital for five years, hoping to observe ocular tuberculosis, without seeing a case. The disease does not extend to the meninges, nor become disseminated to other parts of the body, so far as I have observed. The box like character of the eye may partly explain this. On the other hand, in thirty years of practice and a considerable hospital service, I have known but one case of ocular tuberculosis to die from tuberculosis. All structures of the eye may become the seat of the tuberculous process except the lens, and it indirectly, by having its nutrition disturbed by cyclitis.

CLINICAL PICTURES.

The recognized clinical pictures of ocular tuberculosis have greatly increased in number during the last two decades. It is not so long ago that about the only generally recognized form of tuberculosis of the eye was miliary choroidal tubercle. The fuller appreciation that this disease takes the nodular form, modified by the tissue in which it exists, has made the differential diagnosis from other inflammatory diseases of the eye much easier.

It is in the masked types of the disease that use of tuberculin has aided greatly in making the diagnosis; for example, benign types of choroiditis, nodular episcleritis, proliferating retinitis, retinal hemorrhage in young men, neuritis and neuroretinitis resulting from tuberculous nodules in the optic nerve sheaths, etc.

DIAGNOSIS BY TUBERCULIN O. T.

Changes in tuberculous area resulting from diagnostic doses of tuberculin (O. T.) manifest themselves in terms of injection of vessels, in exudate, in hemorrhage (retinal vessels), in reduction of sight, and in tenderness on pressure. In only about 25% of ocular tuberculosis is focal reaction by tuberculin obtainable. It is commonly seen and most easily recognized in tuberculous iritis. It is least commonly seen in conglomerate tubercle, and then only by use of massive doses.

In optic neuritis or neuroretinitis[1] caused by tuberculous nodules in optic nerve sheaths, the reaction is reduction in sight in the affected eye, coming on 17 to 24 hours after injection and lasting four days, with return of sight to what it was before the injection. This sight reaction test is justifiable when other means of diagnosis have failed. No reports of damage to eyes have been made. The Viennese physicians (Novak) used diagnostic doses (2-5 mg. O. T.) for treatment as well as for diagnosis in conglomerate tuberculosis in posterior part of the eyeball and uvea, repeating the dose every 48 hours as long as thought necessary. The diagnostic dosage varies in different hands from 1 to 5 mg. O. T., given subcutaneously at varying intervals, with a tendency to the use of smaller doses in this country. The writer[2] has seen focal reaction produced by 10/500 mg. T. R. without general reaction. More careful study of the tuberculous area before and after the dose, by means of corneal loupe, slit lamp, etc., will bring to light the reaction that otherwise would escape detection. The ideal dose is one that

will produce focal reaction and falls short of causing general reaction.

THERAPEUTIC USE OF TUBERCULIN.

Tuberculin has been used in Europe and America for the last twenty years in the treatment of ocular tuberculosis and it has stood the test of time. It is in chronic small foci, that the remedy is most effective. In large masses of tuberculous tissue, the therapeutic use is not satisfactory; oftentimes, of no use whatever. We are still at sea as to dosage. Von Hippel taught to begin with 1/500 mg. T. R., gradually increasing the dose every second day to 1 mg.; never repeating a dose sufficient to produce reaction. Sir A. E. Wright advised giving infinitesimal doses (1/5000 to 1/2000 mg.) on the theory that this amount is sufficient "to activate the formation of antibodies." He said there was danger of paralyzing that function by using large doses. Practice in America, in the main, follows the von Hippel method, with a tendency to use smaller doses than at first practiced. I think the same may be said of the practice in England. The Viennese ophthalmologists use the infinitesimal doses (B. E.) for small foci. For therapeutic purposes they begin with 1/1000 mg. (B. E.) subcutaneously and increase the dose gradually to 1/10 gm., given every other day at first, and later on once or twice a week, and prolong interval to 7-8-10-12-14-16-20 days. When the higher dosage is reached cold abscess may occur at site of the injection, which they interpret to indicate the patient's relative maximum dose, which dose should not be increased. The dose should not, in any event, be larger than 1 mg. (B. E.)

While the temperature curve is, in many cases, a delicate criterion for guidance, the writer is of the opinion that the clinical symptoms, in terms of headache, malaise and loss of appetite, increased pulse rate, etc. are oftener more delicate and less harmful a test; indeed, safety in the administration of this remedy lies in a dose far below that which produces untoward symptoms. On the contrary, a feeling of well-being, good appetite and increasing weight is good evidence that the patient is getting the proper amount of tuberculin.

THE SPECIFICITY OF THE TUBERCULIN REACTION.

For diagnostic purposes the specificity of the tuberculin reaction cannot be successfully questioned. To my mind, the most convincing proof has been furnished by the veterinarians. Their results with the test is almost 100% perfect as checked up by immediate autopsy. Frankel[3] in a study of 8,000 cattle, tested by tuberculin and checked up by autopsy, found only 3% error. Voges[4], in 7,000 tests, found 2 1/4% error.

The specific action of tuberculin as a therapeutic agent is not so susceptible of demonstration. There are clinicians whose opinions must be considered, who believe it has no specific action on tuberculous tissue; but has therapeutic value in common with other bacillary foreign proteins.

Just what part the antibodies stimulated by tuberculin play in the healing process is yet to be determined. Wright believed them to be the controlling factor. Recent work of Wassermann, Coulthard and others indicates that the antibodies produced by the killed tubercle bacilli, in tuberculous animals, produce a complement fixation in certain cases, and that this is independent of a positive Wassermann. Coulthard[5], Bordet and Gingou found that this immune reaction was elicited only in animals in which the bacilli were killed or nonpathogenic (avian) bacilli were injected; and further, that in animals subsequently injected with virulent strains death was retarded but not prevented. Antibodies were not present when virulent strains were used. These observers found the results to be similar in humans. Acute phthisis, acute miliary tuberculosis, tuberculous meningitis show little or no antibody formation, as evinced by the complement fixation method; while in chronic cases, when tolerance to the injection is high and the patient relatively well, the production of antibodies is great. Pari passu with the diminution of re-

sistance to the tuberculous process the antibody lessens. It is to be hoped that this Wassermann tuberculous reaction will prove to be of practical value in diagnosis. Coulthard believes this test to have more value in prognosis than in diagnosis. He says "A strong positive reaction means a well developed resistance to the tuberculous disease and a relatively long lease of life may be expected; on the contrary, a weak reaction in a well established case indicates lack of response to the infection and, therefore, guarded prognosis."

That the therapeutic value of tuberculin lies in the production of hyperemia and the resultant fibrosis in and about the tuberculous nodule, thereby isolating it, must be considered. The idea is well put by Kraus as follows: "It is a well known principle of pathology that chronic passive congestion is followed by fibrosis. Tuberculin, in proper dosage and spacing of injections, can elicit a series of mild alergic shocks about the focus of disease, maintaining a more or less constant degree of hyperemia. Evidence indicates that this is followed by fibrosis and fibrosis is greatly to be desired; therefore, in chronic tuberculosis, where lesions are located in a certain organ or organs, the administration is advantageous."

Progress in the problems that confront the physician in the use of this complex organism is waiting on the further study by the physiologic chemist, aided by the clinician. It will not be made until the dose is standardized and this result will not be attained until the harmful part of the bacilli is separated from the useful, and a fuller knowledge gained of the difference in effect of the toxin and the endotoxin on tuberculous tissue. Koch used the toxin (filtrate) for diagnostic purposes and the endotoxin (ground up bacilli) for therapeutic purposes. Practice has followed his lead ever since.

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PLASTIC OPERATION FOR PALPEBRO-FACIAL DEFORMITY.

LOUIS LEHRFELD, A.M., M.D.

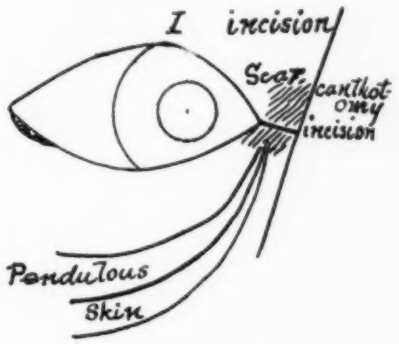
PHILADELPHIA.

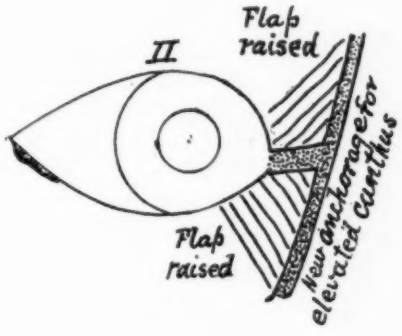
A man thrown face downward on a pile of bricks was seen four months later with deformities of the lids and adjoining parts. Operations were done; first to enlarge the right palpebral fissure, free the lids and raise the internal canthus; and later to remedy redundant tissue and ectropion of the left eye. Read before the Section on Ophthalmology of the College of Physicians, Philadelphia, April 19, 1923.

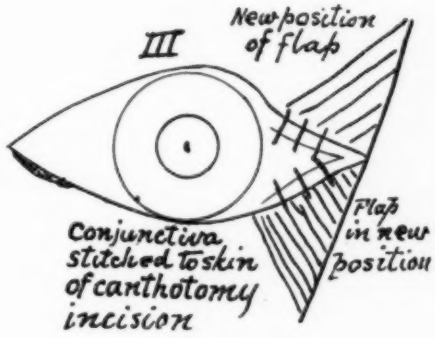
Mr. C. H. was injured May, 1922, while working on a building construction, an object striking his head from behind throwing him bodily forward into a pile of bricks, face first. He was removed to the Hahnemann Hospital in an unconscious state. The records of the hospital read in part as follows:

"May 10, 1922—Laceration of the face from the outer border and angle of right orbit thru the skin, fascia and muscle, extending under the right eye across the bridge of the nose. Another laceration was over left eyebrow. There was profuse hemorrhage from the wounds and from both nostrils. There was found a compound comminuted fracture of both nasal bones and of the perpendicular plate of the ethmoid. A large opening in the mucous membrane of the nose extended upward and backward, involving probably the cribriform plate. On May 10, 1922, an operation was performed at the Hahnemann Hospital, in which a segment of right nasal bone was removed and the lacerations were sutured as best possible by interrupted ligatures. On July 5, 1922, another operation was performed in which the excessive scar tissue was removed from the inner canthus allowing the lids to be separated; the healthy tissues were reunited at the inner canthus, drawing up the lower lid. The patient was discharged on July 27, 1922, after a stay of two and one-half months."

September 25, 1922, the patient was first examined by me and found to have a distortion of the right upper lid, which appeared as tho the lid had been stretched tight across the globe, and drawn in and down on the ala of the nose where it was anchored in a deep thick scar. The appearance was that of a ptosis involving especially the inner half of the lid and covering the upper central and upper nasal quadrant of the cornea, hiding the nasal sclera.

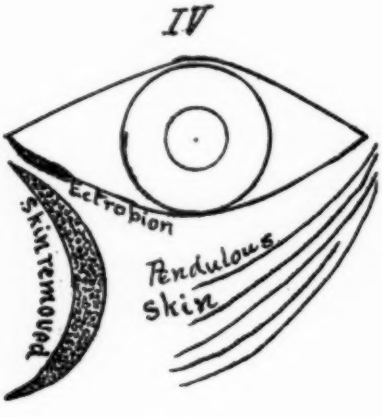






The lower lid presented the opposite condition. It was markedly relaxed, with a suggestion of partial ectropion toward the external canthus caused by a pendulous redundant mass of skin and subcutaneous tissue occupying the natural crease of the malar-oral region. A dense scar like the letter K, about one-half inch to the temporal side of the external canthus, which contributed to the partial ectropion of the lower lid, inclined to pull the external canthus outward. The natural internal canthus was obliterated and a new one formed by the union of the upper to the lower lid, completely sealing the puncta and hiding the caruncle. A dense irregular scar on the right ala of the nose contributed to the facial deformity, which was exaggerated by the loss of the bridge of the nose. The internal canthus was fully a quarter of an inch below the fellow.

The facial disfigurement was striking in that it resembled the lionetic appearance of hereditary lues—the saddle



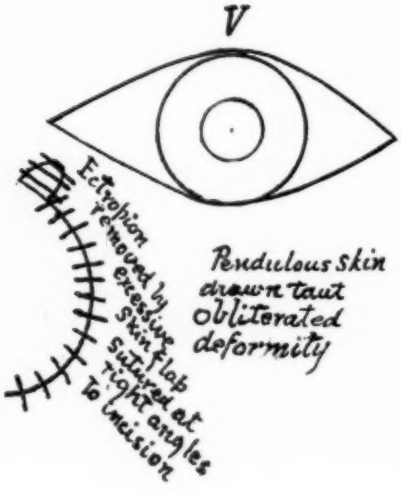

V
Ectrophion removed by excision
Skin Flap sutured at right angles to incision
Pendulous skin drawn taut obliterated deformity

Fig. 6.—Deformity from injury to face and orbit.

Fig. 7.—Deformity seen from the side.

nose, the sad expression and the downward nod of the head. The subjective symptoms were principally vertical diplopia intensified on upward and left rotation of the eyes. The field of vision of the right eye was also obstructed when looking up and to the left. The ocular muscles were free in all directions when the right eye was tested alone, but conjugate movement upward showed a lagging of the elevators behind the fellow eye. This was attributed not to any defect of the superior rectus, but rather to the interruption of the associated innervation of the superior rectus and the levator palpebrae superioris, the movement of which was limited by reason of the internal ankyloblepharon. The eyeballs were healthy externally and internally, vision being 5/9 right and 5/6 left.

Fig. 8.—Appearance after operations.

Fig. 9.—Appearance after operation looking up.

The first operation was performed by me on December 9, 1922, at the Garretson Hospital under local anesthesia —novocain 1% being used. The purpose of the operation was first to enlarge the palpebral fissure, remove the upper lid from the anchored attachment to the nose and lower lid, and then reanchor the new formed internal canthus at a higher level on a plane with the fellow eye.

Internal canthotomy was performed at a slight angle downward to avoid scar tissue present. This widened the fissure and partly released the upper lid. Another incision was made deep in the tissues along the nose from the fronto-nasal angle down and out for one and a half inches below the internal canthus, meeting near its middle the horizontal canthotomy incision. The upper flap of tissue, including the entire lid substance, was elevated to meet the plane of the fellow eye. A similar flap from the lower lid and cheek was raised to meet the upper and joined to make a new internal canthus. The conjunctiva was anchored at the new angle of the canthus with the skin margin laid bare by the canthotomy. Number 2 twisted silk was used for suture material.

The dressings following the operation presented no difficulty except for the sloughing of several sutures thru the tissues because of the tension on them. Diplopia was completely corrected.

The second operation performed on January 3, 1923, was intended to remove the redundant tissue of the cheek

and correct the partial ectropion of the lower lid. Instead of removing the excessive skin on the cheek in the natural line of the crease of the cheek, a semilunar vertical incision was made over the malar bone and a quarter moon shaped piece of skin was removed. This permitted me to stretch the pendulous skin and subcutaneous tissue toward the malar surface, thus obliterating the pouch. If a transverse incision had been made on the cheek, it is likely the ectropion would have been exaggerated. In sewing up the semilunar wound, sutures were placed from below upward so there would be purposely a portion of the upper wound which would not be perfectly opposed to the lesser curve of the incision. The sutures at this upper area with excessive skin flaps were placed at right angle to the long incision, giving a stiff support to the old ectropion and thus obliterating it.

Following the recovery from the operation and complete healing of the wound, the patient was refracted and given full vision (5/5) in each eye. The frame was so selected as to hide the saddle nose, completely changing his physiognomy from a disagreeable one to a more presentable one.

Fig. 10 and Fig. 11.—Appearance after adjustment of correcting lenses mounted in appropriate frame.

HEMANGIOMA CAVERNOSUM OF ORBIT.

HOWELL L. BEGLE, M.D.

DETROIT, MICHIGAN.

This is the report of a case in which exophthalmos was caused by tumor in the upper part of the orbit. The tumor was removed by a Kroenlein operation. Examination of it showed it was a cavernous hemangioma.

Mrs. E, age 43, married, consulted me September 27, 1918 on account of prominence of the left eye.

History: The patient stated that the left eye began to bulge forward about seven years previous to this consultation, and that the bulging had come on rather suddenly; and while at times the eye seemed less prominent, it had, on the whole, undergone little change. Occasionally she had suffered from throbbing pain above the eye; but at no time had there been inflammation present, such as to render the eyeball sore or tender to touch.

About two years ago the entire eye became red, as if from hemorrhage into the tissue, but this condition cleared within a few days. The eye tears excessively. A year ago she saw things double for a short time. When she bends over she can feel the eye bulge forward, and in the morning when awaking she has difficulty for a time in opening the eye. The condition has been most distressing in that the deformity has made her ashamed to go out among friends, and for seven years she has been practically a recluse.

Her mother died at the age of 55, the cause unknown. Her father died at 75, from an aneurysm of the chest. Her general health has been good, except for frequent bilious headaches, occasional tonsillitis and head colds. There is no definite history of injury.

Examination: The left eye protruded approximately 10mm. forward and 4mm. downward. Apparently there was no lateral displacement. The motility of the eye was nearly normal, except that abduction was limited and double vision could be elicited on rotation of the eyes to the extreme left.

The eyeball appeared normal externally. The media were clear and the fundus was free from pathologic changes. On palpation no mass could be felt in the orbit. There was some tenderness on deep palpation above the eyeball. Visual acuity of the eye was 20/70. With a plus 1.50 sphere visual acuity was 20/20.

A general examination brought out no pathologic findings. The heart and lungs were normal. The urine was free from sugar or albumin. Wassermann test was negative. Transillumination revealed no evidence of nasal sinus disease. X-ray examinations of the skull and the nasal sinuses were of negative import. The blood showed a differential count of 68% polymorphonuclear, 4% large lymphocytes, 25% small lymphocytes, 2% eosinophiles, and 1% transitionals.

A *diagnosis* was made of orbital tumor probably lying outside the muscle cone and nonmalignant. Operation for removal was advised.

January 5, 1919, the proptosis of the eye was found to have decidedly changed, in that the eyeball had been pushed further downward and was not so far forward as at the first examination. Abduction was more limited. Moreover the pupil was dilated, there was optic neuritis with two diopters swelling, and visual acuity had fallen to 20/200. It was thought that either hemorrhage into the mass or beginning malignancy might explain the sudden alteration. A tumor mass could now be felt in the orbit above the eyeball.

Operation: The Krönlein operation was done the next day. After the periosteum had been excised, the lacrimal gland was first encountered and avoided. The external rectus muscle was not met with, and it was thought that it had been displaced downward by the newgrowth. A tumor about the size of a walnut filled the upper part of the orbit. An incision in the mass was followed by the escape of thin brownish fluid with considerable decrease in its size. It was then easily outlined and dissected free. A pedicle, however, extended backward toward the apex of the orbit. This was carefully cut as far back as possible with enucleation shears.

Healing was uneventful. At the end of four weeks the pupil was still dilated, there was slight convergent squint, movement to the left was very limited, with diplopia when the patient looked in this direction. Visual acuity was still 20/200.

Pathology: The tumor mass was of irregular outline, measuring 32mm.x25mm. x15mm. The following is a brief pathologic report from Dr. Warthin of the University of Michigan: "The tumor from the orbit is a hemangioma cavernosum. It shows areas of thrombosis and organization of some of the sinuses, with much blood pigment, some cholesterin, new formation of lymph nodes, a few remains of lacrimal gland, but no malignancy".

Fig. 1.—Appearance of patient when first seen.

The condition of this patient at the present time is highly satisfactory. She was last seen and examined in March 1923. The line of incision appears as a depressed smooth scar; the upper part is covered by the patient's hair and the scar is not noticeable to the casual observer. There is a shade less fullness of the left upper lid, otherwise the eyes appear similar. Both pupils are equal in moderate daylight. The eyes are straight. Movement of the left eye outward is slightly limited. While the optic nerve shows temporal pallor and there are a few white streaks along some of the arteries, visual acuity with a plus 1 lens is 20/40.

Fig. 2.—Appearance of patient four years after operation.

FACOERISIS.

LLOYD MILLS, M.D., F.A.C.S.

LOS ANGELES, CALIFORNIA.

The attitude of ophthalmologists toward new cataract operations is briefly discussed. Professor Barraquer's personal history and tastes are touched upon. The technic of facoerisis is given and also his method of making the corneal incision, closing, dressing and after treatment of the corneal wound, as observed in his clinic. His cases are studied with the corneal microscope, showing general absence of vitreous disturbance.

The present attitude of American ophthalmologists in general toward intracapsular methods of cataract extraction is either one of hopefulness and of careful testing of the merits of the various forms of operation now in the field, or of more or less openly antagonistic conservatism.

This attitude has been the direct and logical result of the unjustified exploitation of one form of intracapsular operation. The proponents of this method, by their reiteration that this was the only perfect means of removing all types of cataracts, and by their insistence that only the men who qualified to do this particular form of surgery could justly be considered as cataract surgeons, created an intense interest in the matter. The frequency, however, with which tragic disaster followed brilliant success, even in master hands, led, in a short time, to general abandonment of the procedure.

The most unconscionable of these exploiters, driven by the magnitude and gravity of their failures to turn elsewhere, adopted a later and more promising form of intracapsular operation and when, without a word of apology for or recantation of their earlier excesses of word and deed, they stood forth as the champions of a newer method, this method, regardless of its possible merits, was damned then and there by such discredited advocacy. Men who might have been interested in the newer procedures were unwilling to attempt the methods or to make open espousal lest they, too, might be considered as irresponsible and false guides.

It seems likely, therefore, that the general adoption of any method of intracapsular extraction of cataract in America will follow only upon convincing proof of the merits of the procedure from many and incontrovertible sources.

A mass of complete surgical data must be built by the efforts of a number of average ophthalmic surgeons, must be analyzed and be compared, first with the data presented by the originator of the operation, and finally with the results obtained after the combined extraction, generally accepted in America as the standard form of extracapsular extraction, and as the one most capable of successful performance by the average operator. Any intracapsular method which will stand the test of such comparison and meet with general acceptance must be shown to give obviously better results in the hands of average operators than the average obtained by means of the combined operation, regardless of the fact that we shall be comparing a method which is presumed to function successfully both in immature and mature cataracts, with one whose only general application is to mature cataracts. Until such data, now in process, can be accumulated and such comparisons made, the only fitting course is to withhold destructive criticism.

It may be of interest, in commenting upon some phases of the Barraquer operation for the intracapsular extraction of cataract, to sketch a background of facts concerning its originator and the method itself which are not generally known. The father of Ignacio Barraquer, Prof. José A. Barraquer, was one of the first to introduce modern ophthalmologic practice into Spain, and until his recent retirement, he was Spain's foremost ophthalmologist. His broad culture and rare diagnostic ability, his colorful surgical skill and an outstanding scientific precision, found their early reflection in the son, Ignacio, who began his active surgical career in the eye clinic of the University of Barcelona at the age of 13, under the guidance and inspiration of his father. While still a youth, Ignacio showed a keen aptitude for mechanics

and electricity, and this has developed to the point that, while only forty years of age, Dr. Barraquer has become a physicist of no mean rank, an electrician of high order, an expert mechanic and an inventor.

The basement of his home is an electromechanical jungle of lathes, forges and all sorts of experimental apparatus, and here three or four men are busied constantly in putting into form the ideas concerning the many physical, electrical and surgical appliances with which Dr. Barraquer occupies his spare moments. His main idea of a holiday is to spend the time in working these problems out with his workmen. I have the impression from my acquaintance with Dr. Barraquer and his work, that his peculiar role in Ophthalmology will prove to be that of making the extensive application of electromechanical appliances to ophthalmic surgery.

The origin of Facoeresis, as told me by Dr. Barraquer, goes back to the day when after watching a leech at work on the temple of a patient, he conceived the idea of inducing a leech to attach itself to the lens in the hope that the lens might be extracted intact by merely pulling the leech out. Such an extraction was successfully done upon the first and only case in which this procedure was ever attempted, and from this crude maneuver sprang the present suave procedure.

The criticism is made that this form of intracapsular extraction of cataract requires especial training or unusual ability, and hence is not available for the average operator. The men who make this criticism forget that the real mastery even of the combined extraction cost them many months of labor and worry, and that such acquisition constituted special training. It is true that Barraquer is superlative in his operative judgment and skill, and it is unlikely that any individual in his generation will equal his results, but his method has no insuperable obstacles and it can be acquired by any reasonably competent man who is willing to give the relatively small amount of time required to learn the individual limits of its applicability.

From my experience and from knowledge of the work of several excellent ophthalmologists in England, America and France who had attempted vacuum extraction after reading a description, I believe that mechanical and technical smoothness can seldom, if ever, be acquired from written descriptions alone. The only other alternative, a visit to Barraquer under the relaxed conditions of his own surroundings, is a surgical inspiration, as well as a lesson in courtesy such as is met with rarely. Barraquer advises beginners frankly to attempt the procedure at first only upon cases of known safety, realizing that greater acquaintance with the apparatus will permit of greater latitude and proficiency. He knows that in his hands the procedure is infinitely safer for the patient than any other method, and he believes sincerely that any average operator can acquire the technic with a little time and patience. The way that George Derby has approached the procedure is, in my opinion, most commendable. He applies the vacuum cup to the lens in suitable cases sufficiently long to allow the suspensory ligament to rupture, after which the erisiphake is removed and the lens delivered by lens forceps.

The fundamental point in technic is, of course, the manipulation of the erisiphake. Trials with the apparatus on the eyes of cadavers and on the eyes of kittens are not entirely satisfactory. The technic in best acquired, either by using eyes of cadavers hardened in formol or the lenses of cats made cataractous by injecting strong formol behind them. The lens should be lifted out of the patellar fossa by smooth forceps, the vacuum cup applied; and then, held in the cup by suction. The lens can be repeatedly inserted into and removed from the fossa until the wrist technic is mastered. Obviously, such material can be used many times.

The erisiphake in its present form seems heavier than it should be, and for this reason transmits to the hand too little sense of contact or of vibration. I have suggested that it would be more easily and more cheaply made if aluminum were used. The instrument should be grasped by the middle finger on one side and the index finger and thumb on the other, but with the fingers well flexed and out of the way, while the thumb and index finger are placed as near to the

root of the platinum portion as is possible. Vacuum contact is made by a gentle squeeze of the valve by the side of the thumb but without pressure on the lens. At its introduction the instrument is held nearly vertically, the direction being given to "keep the point down strongly at first." This brings the opening in accurate contact with the lens and, if done correctly, prevents any chance for aspiration of the vitreous. The maneuver is done wholly without pressure, contact with the lens is maintained for a fraction of a second in order to allow the lens, with its nucleus, to mold into the cup and to permit the rupture of the zonule before rotation is begun. Ideally, the lens is rotated around its own center without changing the position of this center until the lower border of the lens has become the upper border and the anterior face has been turned posteriorly. The hand rests upon the brow and temple which serves as the fulcrum of the gentle rotation. The lower border of the lens is rotated gently forward into the pupil, the back of the cup looking first forward, then up and then gradually blocking the pupil as the lens rotation is complete. The motion of manipulation is almost wholly a wrist motion with a little sliding of all the fingers in the final movement of extraction.

The breaking strength of zonules differs materially. This is shown by Barraquer's experiment of cutting the anterior segment of an eye away from the rest of the globe. This segment is placed with the cornea up and slung in this position from a delicate metal tripod. Weights are applied to the zonule by a little balance pan beneath, and it is found that it requires about five (5) to ten (10) grams weight to rupture the suspensory ligament. The zonules of hypermetropic eyes appear to be the tougher, as the greater muscular activity has led to greater muscular and ligamentous strength. Less weight is required to rupture the zonule in myopic eyes, which means that the lenses are more easily extracted from such eyes, but that these eyes are also more fragile and more exposed to the dangers of too brusque manipulation.

The Barraquer operation is now perfected to a point of practical standardization and while a voluminous literature is already available on the subject, some details seem worthy of emphasis. The usual method of fixing the globe is to grasp conjunctiva, episclera and, if possible, some of the adjacent tendinous expansion of the nearby muscle and to hold the globe somewhat down by pressure. In the Barraquer operation the conjunctiva and episclera only are fixed at practically axis 90° below. There is a slight lifting with the fixation forceps after the incision is begun. The lifting and steadying of the eye prevents the excessive deformity of the now flaccid globe which, if pressed upon at this stage, may lead to rupture of the zonule or capsule, tearing of the hyaloid and loss of vitreous before anything else has been accomplished.

In the same way, the incision has been adapted to a type least liable to deform the eye or cause pressure upon it. The incision most common among American operators is that of a rather sudden and lifting counterpuncture with the least possible number of long, dragging and deforming upward pulls or sweeps of the blade. Barraquer uses the violin bow movement instead, the repeated small rising sweeps, using alternately the heel and toe of the blade, causing no distortion of the globe, as all dragging and pressure are studiedly avoided. The incision is unusual in that the knife is entered at the limbus at right angles to the sclera and is turned parallel to the face of the iris only after the tip of the blade has just penetrated the anterior chamber. The value of this type of incision is shown by comparing this incision on the eyes of cadavers with the usual incision. By cutting the cornea away after making the comparative incisions, it will be seen that our usual incision leaves a sharp-edged shelf of sclera which projects into the anterior chamber, limits the space thru which the lens can emerge, gives more likelihood of inclusion of the iris in the scar and permits free sliding of the corneal flap. This ridge is not formed by the Barraquer incision. Furthermore, when the incision reaches the limbus above, the blade is directed backward and downward for just long enough to form a small tongue of sclera before emerging to cut the final conjunctival flap. This aids materially in the final coaptation of the flap.

The flap is everted at this point by the heel of the Liebold-Barraquer iris scissors, while the iris is grasped as near to the root as possible by the excellent Hess-Barraquer offset iris forceps and the smallest possible peripheral iridectomy is made. The maneuver is much simpler for a beginner if an assistant gently everts the flap to expose the iris at its root. A suture of fine black silk is now inserted as a routine procedure. This is a simple thru and thru suture, passing into both sides of the wound with a single insertion of the needle, passed as close to the cornea as possible below, and with good anchorage above in the conjunctiva. A double tie is placed but not set. This is then loosened and the umbo of the loop draped about the temporal part of the incision thru which the erisiphake is to be inserted. The loose ends of the suture are passed nasally, one below and one above, where they can be reached easily. It is notable that Barraquer's first thought, next to the actual safe delivery of the lens out of the lips of the wound, is to assure the tying of this suture before any trouble can result.

Blood clots are now cleared away by forceps without pressure, excessive fluid is removed by gauze (never cotton) without touching the globe, and the erisiphake, tested both by manometer and ear, is gently eased into position just below the border of the iris to the left of center. A gentle lateral movement shows that no iris is included, gives a slight sense of the resistance of the lens and the tip of the cup is slightly depressed to make contact, at which point the vacuum is applied, the zonule broken by vibration alone and the manipulation of extraction performed. The original method of sliding the lens up thru a formal iridectomy opening has been replaced almost entirely by the routine rotation of the lens as described above.

The extraction is almost instantaneous in favorable cases. When the lens is large or very soft, the movement must be done with greater care, the lower border of the lens being rotated until it is well thru the pupil, when the vacuum may be released and the cup reapplied at a position of better mechanical advantage and of less torsion on the lens. At times the lens is removed from this position by a Kalt forceps. The beginner may also find it helpful at the commencement of rotation to have very gentle pressure applied upon the cornea below by an assistant. Barraquer himself finds this necessary, however, only in the rarest cases, but advises it for beginners, with care that such pressure is immediately removed the moment normal delivery is assured. The cup may slip from the lens during rotation and air may enter with a slight hissing sound. If this occurs, the cup may be reapplied several times if rotation is seen to be taking place normally. Delivery in such cases is nearly always accomplished with the aid of slight corneal pressure below.

At times Barraquer uses the lens in the erisiphake and even the back of the erisiphake itself without the lens, to tampon the pupillary area by gentle pressure thru the center of the cornea to keep the forward flowing tendency of the vitreous in check until the suture is set and tied, avoiding any semblance of pressure upon the globe in any other manner. The toilet of the eye is begun only when the final knot is set. Shreds of blood or of capsule, in the rare cases of rupture during emergence, are lifted away by forceps (never wiped away by cotton or gauze) until the whole line of incision is clear. Any possible inclusion of the iris is now released by gentle circular rubbing above and below the incision and this release is made final by the careful use of the iris repositor which, of course, never enters the open area of the pupil, as rupture of the hyaloid is almost certain in that event.

The extent to which the eye tends to restore itself to a normal condition with a minimum of manipulation in these cases is remarkable. The cases are never left until the pupil is central and all possible enclavement of the iris released. Where there is the least tendency of the wound to gape, or if the sclera has been incised a little more widely than usual, one or more added sutures are inserted for further security. Eserin ointment is used freely, and a dressing applied of gauze moistened with salt solution, over which torn fragments of cotton are placed to conform accurately with the contours of the orbit and nose. Gauze is again placed over this and all secured by adhesive. The dressing is not changed for four

days unless there is pain or other discomfort. The absence of discomfort is a sure indication that the case is progressing without complications.

The small amount of astigmatism which follows this operation has been a notable revelation in my own work. I had found that an average of about 2.5 diopters of astigmatism resulted after my previous extractions. Barraquer reports that the amount of astigmatism ranges from 0.5 to 1.0 diopter. So far, in my own cases of extraction by this method, I have found a maximum of 1.5 and a minimum of 0.5 D.

The slit lamp has been in routine use both in Barraquer's private practice and in his clinic almost since its inception. All of his private cases are examined by this method, and the condition of the lens, its capsule and its supporting structures invariably are determined by this means before cataract extraction in all patients, whether private or clinic. All cases of cataract, furthermore, are investigated by this means before discharge, the significance of which is that the several thousands of patients, operated upon by the Barraquer method, by the Smith technic, by extracapsular extraction and the many complicated irregular extractions, have been subject to a critical postoperative study by use of the slit lamp. I have no intention of anticipating Barraquer's findings other than to say that he makes the flat statement that in uncomplicated cases of vacuum extraction, hernia of the vitreous thru the pupil practically is never seen. In those complicated cases where hernia has occured, the herniated vitreous apparently has not had the slightest influence in reducing or influencing visual acuity, nor has this condition been observed to have any association with or relation to later secondary glaucoma or retinal detachment, a possibility suggested by Luther Peter (Amer. Jour. Ophthal., Aug. 1923, p. 644). Glaucoma, of course, is recognized as occurring after apparently normal and satisfactory extractions of cataract by any known method, but it is recognized as occurring practically always in relation to iridic or capsular incarceration or as an accompaniment of phako-anaphylactic reactions. None of these conditions can possibly arise from a correctly done Barraquer operation.

The possibility that the instrumental vibration which breaks the capsule may set up vitreous or other intraocular disturbances and be productive of vitreous opacities, as Peter further suggests, is an interesting theory, but is not at all borne out by Barraquer's findings nor by my own humble investigations. I am certain that if vitreous opacification were related to, or even only occasionally the product of this vibratory force, we would have learned of it from Barraquer himself. It is not conceivable that changes of such a nature could be produced without at the same time producing some external manifestation such as inflammations or visual defects. On the contrary, the course of the vast majority of all Barraquer extractions is notoriously uneventful and free from inflammations.

Dr. Barraquer completed his third series of a thousand cataract extractions by his method during my stay, and it is likely that the final results of the second and third thousand cases, when analyzed, will exceed the unprecedented results of the first thousand, which were so far superior to those ever obtained by any previous operator or method as to seem almost impossible of credence. A stay in Barcelona, of sufficient time to enable the observer to follow and study a series of operative cases thru to the point of discharge, will give the unreserved conviction of the complete accuracy of these records, which serve as an enduring tribute to the genius and to the masterly skill of Ignacio Barraquer.

CATARACT EXTRACTION AFTER BARRAQUER'S METHOD OF PHAKOERISIS.

A. R. UBALDO, M.D.

MANILA, P. I.

This paper describes the Barraquer operation and the technic used in its performance in the Eye Department of the University of the Philippines. It gives statistics of ten cases operated on by this method. Read before the Colegio Medico-Farmaceutico, Oct. 30, 1922 Translated by Dr. A. S. Fernando.

The different technics for the extraction of cataratous lenses are based mainly upon two fundamental principles: complete extraction of the lens in its capsule, and partial extraction leaving the capsule behind.

The latter, or partial extraction, is the one commonly done. This operation has many disadvantages. In the first place, as the capsule and portions of the lens are left behind, another form of cataract known as secondary cataract is developed, and this almost always requires a second operation.

This secondary cataract, and the remains of the lens left in the posterior chamber together with the vitreous, give rise to inflammatory reactions in the choroid, retina, and especially in the iris. As a result of this there is produced a more or less marked iritis, uveitis, or iridocyclitis, which by involvement of the retina diminishes the visual power in proportion with the degree of the inflammation.

It is with a view to avoid these great inconveniences or disadvantages that another technic has been devised. This led to the total extraction of the lens with its capsule. The two great surgeons who have practised this technic were: first, Col. H. Smith, an English surgeon in India, and second, Professor I. Barraquer of Barcelona. While it is true that the technic followed by these two men is founded upon the same principle, their individual mode of procedure and the instruments used by each, are entirely different.

Barraquer compares a cataractous lens to a cyst, and from this point of view the ideal operation for its removal would be one in which it is completely extirpated with its cyst wall or capsule. The cyst wall in the cataract is represented by the lens capsule which is very delicate and friable. There is no known instrument or forceps which could be used to grasp it whole without tearing it. Because of this, a means of holding the lens sufficiently firmly to separate it from its normal attachments or zonula, and to remove it without breaking its capsule has been devised. Barraquer's apparatus meets these requirements. In the Ophthalmological Congress in Vienna last August, which I had the opportunity of attending, Barraquer demonstrated his technic of operation of cataract extraction, with his apparatus which he called the *Erisiphake*. This apparatus has two principal parts: a pump capable of producing a vibratory vacuum and a suction cup made of platinum. The pump is worked with a small electric motor. The vacuum produced can be regulated, and there is connected with it a vacuometer which indicates the degree of the vacuum present.

The suction cup is somewhat oval in shape and of a size corresponding to 1/3 of the anterior surface of the lens. It is perforated in its concave surface for the transmission of the vacuum. The handle of this cup is provided with a set of valves controlled by two buttons, with which the amount of vacuum can be regulated, and in this way the cataract may be caught or let loose by just tightening or loosening the button.

TECHNIC OF THE OPERATION.

The operation of cataract extraction by this method has been called Phacoerisis (phakoe—lens; erisis—to extract or to pull).

The operating room should be feebly illuminated by daylight, so as to allow the use of a strong electric light. This is usually provided with a handle. The lids, eyelashes and lacrimal sac should all be in a healthy condition. To prevent contraction of the orbicularis oculi, novocain is injected. Anesthesia is secured by instillation of a 4% solution

of cocain, one or two drops every 15 minutes for one hour. A few drops of a 10% solution of euphthalmin are also dropped into the eye about two hours before the operation.

The upper eyelid is raised with a Desmarre's retractor. The eyeball is fixed with a fixation forceps at its lower portion. The corneal incision is made over the upper 2/3 of the corneal circumference, with a conjunctival flap. Whenever possible, a peripheral iridectomy should be made, as this tends to prevent prolapse of the iris and at the same time a normal round pupil is obtained.

The erisiphake is introduced into the anterior chamber thru the corneal incision and the cup is applied over the anterior surface of the lens. By pressing the button in the handle of the erisiphake, a vacuum is produced and the lens is firmly held but without making much pressure. The cup with the lens adhering to it is now gently pulled out, (making it first slide over the surface of the vitreous) across the pupil, towards the corneal incision.

The margins of the corneal wound, the iris, and the conjunctival flap are examined and restored to their normal positions as much as possible. A few drops of eserin sol. is now instilled into the eye and an ointment of bichlorid of mercury is applied over the lids. A piece of gauze and an eye pad are then applied over each eye, and held in position with strips of adhesive plaster. The wire screen, or protector, is finally put over these.

POSTOPERATIVE TREATMENT.

The patient is advised to stay quiet in bed for the first 24 hours, and later is allowed to sit up in bed, or walk but with a certain moderation in the movements. On the 3rd day the dressing over the unoperated eye is removed; and one week after the operation the dressing on the operated eye is also removed, unless there arise some complications like intense pain, excessive secretion, etc., when the dressing should be removed earlier.

Ordinarily the pupillary area of the operated eye is found to be clear, the iris almost normal and not congested, and there is no redness of the bulbar conjunctiva.

This is, in general, the technic of phakoerisis.

THE FIRST TEN CASES OPERATED HERE.

With this technic I have obtained the following results: 10 cases of matured, senile cataract. Patients of from 45 to 80 years of age.

With peripheral iridectomy..6 cases
With accidental iridectomy..4 cases

Loss of vitreous occurred in 2 cases. In one it was due to "squeezing" of the lids. In two cases the iris was accidentally caught with the lens by the sucking cup, and it became necessary to let it loose. In one case the lens sank into the vitreous, which was somewhat more fluid than gelatinous in consistency. In another the extraction of the lens had to be done with the wire loop.

Vision in these cases taken two weeks after the operation: 1 case 20/20, 3 cases 20/40, 2 cases 20/70, 2 cases 20/200, 1 case negative (lens sank into vitreous), 1 case, the last one operated on, is still in the hospital with iritis.

Conclusions. With phakoerisis, restoration of the visual power is on the average better than that obtained with the capsulotomy method. There is no secondary cataract, nor is any portion of the lens mass left, which is the cause of subsequent iritis or iridocyclitis and which affects the visual power of the retina. A second operation of discission for secondary cataract is avoided.

The repeated efforts of pressing in order to expel the remnants of the cataract, needed in the capsulotomy method, is here done away with. The accidents which may arise from this manipulation are avoided in phakoerisis; and as the capsule is not broken but the lens is extracted whole, there are no residual lens masses left, and as a result we have a clean anterior chamber and a completely transparent pupillary area.

The only disadvantage of this method of operation is that the operator has to depend on the good working condition of the apparatus for his success.

THE "V" TEST FOR ASTIGMATISM, AND ASTIGMATIC CHARTS IN GENERAL.

F. H. VERHOEFF, M.D.,

This is an historical and critical note on the V test and some others related to it.

About two years ago E. E. Maddox[1] described the "V" test, as he termed it, as a new test for astigmatism. Thorington[2] also evidently regarded this as a new test. I have employed this test for the past twenty-four years, and in my paper[3] on "Two New Astigmatic Charts" published in 1899, I described it as follows: "Another method is to rotate the disc until the two lines appear equally distinct. The axis will then lie halfway between the two lines."

The test may be made still more accurately in this way: After the disc has been so placed that the two lines appear equal, it is rotated until one of the lines just begins to appear more distinct than the other. It is then rotated in the opposite direction until the other line just begins to appear more distinct. The axis of astigmatism will then lie halfway between the two points thus determined.

I investigated the question as to the best angle for the "V" many years ago, but did not publish my results. As Maddox does not discuss this question, it may be well for me briefly to do so now. Obviously, the greater the astigmatism the more acute the angle should be, but since there is no difficulty in determining the axis of high astigmatism by the usual methods, there is no need of a special chart for this purpose. I therefore determined by trial the angle which seemed best for astigmatism of .50 D. and found it to be about 60°. In actual practice, however, I found that a chart made with this angle was so little superior to my ordinary rotary chart that it was not worth the inconvenience and time required to place it in position, and I therefore abandoned its use.

In recent years it seems that the use of astigmatic charts is becoming more general. In my opinion they afford the most accurate means of measuring astigmatism. In questioning various ophthalmic surgeons as to their use of astigmatic charts, I have found that those who do not rely upon them do not thoroly understand how to use them.

Lancaster[4] has done a service in emphasizing the fact that the background of an astigmatic chart should be as white, and the lines as black as possible, and his suggestion to use strips of black velvet for the lines is excellent. For practical use, I think the ray chart he employs for determining the axis is too large and has too many lines. It is so large that it is impossible to display it satisfactorily at the same time with the rotary chart and the test letters. There is no advantage in having it so large, since its retinal image occupies an area larger than that of distinct vision. So many lines on the chart make it more confusing to the patient and also make it more difficult for him to designate the axis to the examiner. Within practical limits of error the same accuracy can be obtained with the fewer lines on my ray chart. Thus if the patient selects the line at 90° as the most distinct, I enquire which is the next most distinct. If the answer is "75°" I regard the axis as at 85°. If two lines appear equal, the axis lies halfway between them. In the case of a moderate degree of astigmatism, any attempt to be more accurate than this is superfluous, while in the case of astigmatism over 2 D. the final determination, or at least confirmation, of the axis is most readily made by use of the test letters, after the exact amount of astigmatism has been determined by the charts. In cases of high astigmatism, in fact, the axes should be adjusted after the glasses have been made up, for it is impossible for the optician to place the axes of the cylinders with the extreme accuracy necessary for the best vision. This adjustment can be made by bending the frame slightly, or in the case of the round lenses now generally

worn, by rotating the latter to and fro until the best vision is obtained.

By means of photographs, Lancaster attempted to show that his chart was superior to my rotary chart. As the effect of the fine lines on my chart is largely psychologic, I doubt that a photograph will give a fair idea of the effect they produce when viewed by a patient. At any rate, to make the photographic test of real value, more precautions would be required than were evidently taken by Lancaster. Lancaster used a homemade chart with a background of selected white paper and lines of black velvet, to compare with one of my printed charts supplied by an optician. A fair comparison of the principles involved in the construction of the two charts could only have been made by copying my chart upon the same paper used for his and also making the lines equally black. The two charts were apparently photographed upon the same plate, and hence with the same exposures, whereas, to allow for the differences in the intensities of the lines and the paper, two correspondingly different exposures should have been made. A +0.75 D. cylinder was used in front of the camera lens, with an aperture corresponding to an ordinary pupil. The fact really required to be determined, however, was not which chart would show the greatest apparent difference between the two lines in the case of astigmatism as great as 0.75 D., because obviously almost any chart would show sufficient difference to reveal this amount, but with which chart was it possible for a patient to detect an astigmatism of 0.25 D. or 0.12 D. the more readily and certainly, or, in other words, which chart was the more accurate for *measuring* the exact amount of astigmatism present in a given case. For determining this fact Lancaster's photographs are of little value. However, it seems to me that his Fig. 3A, p. 175, shows definitely the advantages of the fine lines on my chart.

A question that seems to have received little if any attention is that of the optimum illumination for astigmatic charts. According to the theory of Ferree and Rand[5] regarding the illumination of test letters, a low degree of illumination of astigmatic charts should give the best results. That this is not true, I have easily convinced myself. For the best results I have found that it is necessary to have an illumination which will permit a patient with vision of 20/15 to read without difficulty the line corresponding to this vision on the letter chart. Theoretically, it should be possible for the illumination to be too great, so that it would exaggerate the effects of the various aberrations of the eye and also reduce contrasts by causing severe and prolonged retinal fatigue. I have not ascertained just how high an illumination is required to do this, but I am sure that it is very high, certainly higher than that generally employed.

In cases of high astigmatism, Jackson[6] many years ago described a method of measuring the amount of astigmatism which is worthy of more attention than it has received. He employed a single line placed first at the axis of astigmatism and then at right angles to the latter. By determining, for each position, the strongest spherical lens with which the line could be seen most distinctly, the amount of astigmatism was shown by the difference between the two spherical lenses thus found. This test may be made still more readily with my rotary chart, by determining the best spherical lens, first for one line and then the other.

I have also investigated to some extent the possible advantages of employing colored lines and colored backgrounds for astigmatic charts. Theoretically, it would seem that by employing, for instance, red lines upon a black background, more accurate results would be obtained because chromatic aberration would be done away with. I found, however, such a chart inferior to my ordinary chart, owing to the low intensity of the red lines. For the same reason I found that a colored glass in the trial frame was unsatisfactory. This question, however, should be investigated further.

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A MUSCLE "FOLDER" FOR STRABISMUS.

J. WILBUR CALKINS, M.D.

OAKLAND, CALIFORNIA.

Demonstrated before the Section on Ophthalmology of the American Medical Association at San Francisco, June, 1923.

The advantages claimed for this method of muscle shortening for strabismus are simplicity of instrument and of technic, a method of graduating the length of muscle taken up, and a manner of putting in of sutures which makes cutting thru or slipping of sutures almost impossible.

The instrument is shown in Figure 1. The looped, hairpin like portion of the "Folder" is of very rigid steel, adjustable in length so as to fit about the muscle, and fits snugly into two holes in the handle of the "Folder." This prevents the two prongs (hairpin like part) of loop from bending or twisting as the muscle is being "folded."

The steps of operation are shown in Figs. 2 to 5. The muscle is exposed by a longitudinal or vertical conjunctival incision. After freely separating the muscle on all sides, the hairpin like part of "folder" is placed about the muscle with one prong behind and the other prong in front of muscle. The handle is then attached. The "folder" is then shifted until the prongs are midway between the insertion of muscle and that part of muscle as far back from the insertion as is thought necessary to obtain the desired shortening, Fig. 2. Keeping the prongs always at right angles to the muscle fibers, the handle of the "folder" is then rotated so that the outer prong moves *away from* the muscle insertion and the prong beneath the muscle moves *towards* the muscle insertion, Fig. 3.

As many half-turns of the handle can be made as is necessary to slightly overcorrect the squint. The amount of tension used as the muscle is being "folded" is very readily sensed by the fingers holding the handle of the instrument, and therefore there is no danger of using too much force, thus tearing or otherwise injuring the muscle fibers. After rotating the handle of the "folder," as above described, one, two, three or more half-turns, to slightly overcorrect the squint; the assistant holds the instrument with one prong anteriorly and the other prong posteriorly and the prongs at right angles to muscle fibers. Two double-armed sutures are used with a special

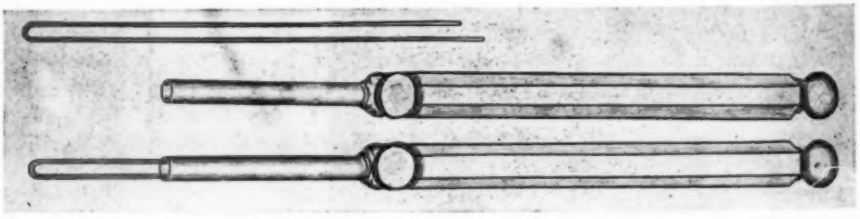

Fig. 1.—Folder in detail, parts separated above to slip loop over tendon and brought together below.

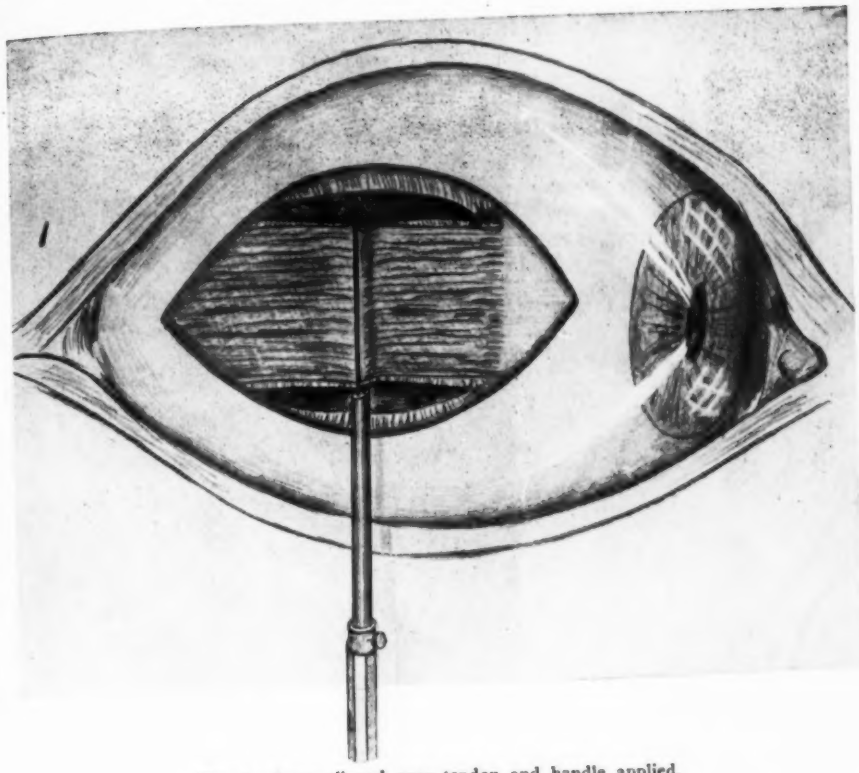

Fig. 2.—Loop slipped over tendon and handle applied.

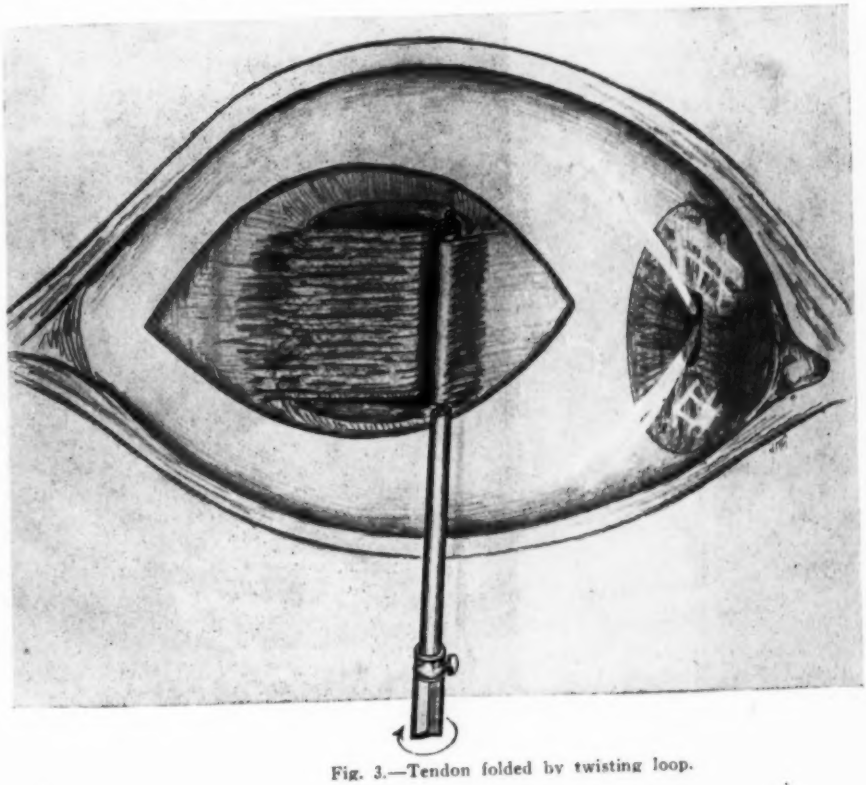

Fig. 3.—Tendon folded by twisting loop.

needle, using Lukens noniodized twenty-day catgut number 0 or 00, or silk. The special needle which I have had made is shown in Fig. 6B, the eye being at right angles to the curve of the needle; and so the suture more readily passes between the prongs of the loop. Figure A shows the ordinary eye-needle, with eye in same plane as curve of needle. This special needle is a very small Hagedorn needle and is better suited for other eye work than the ordinary eye needle.

Insert the needle always towards the

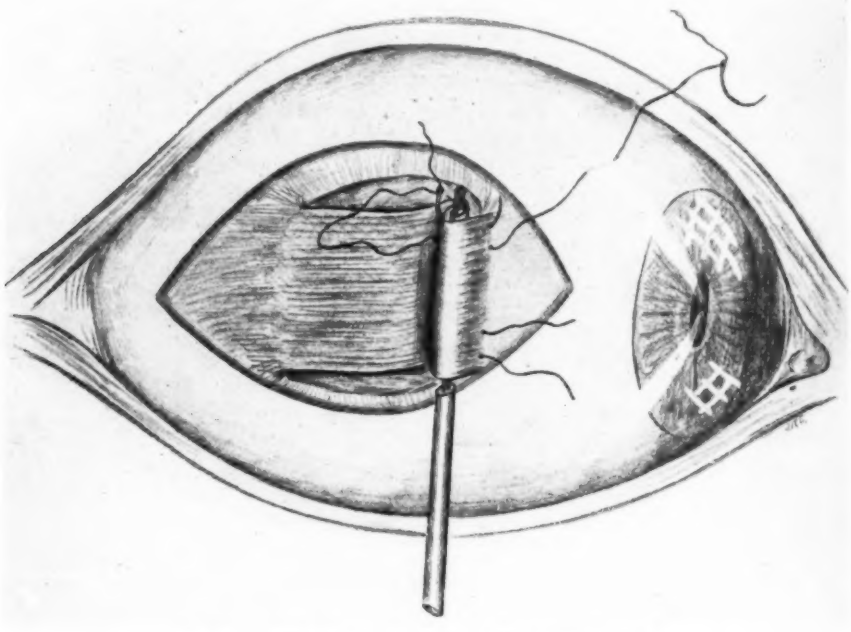

Fig. 4.—Introduction of sutures thru folds of tendon.

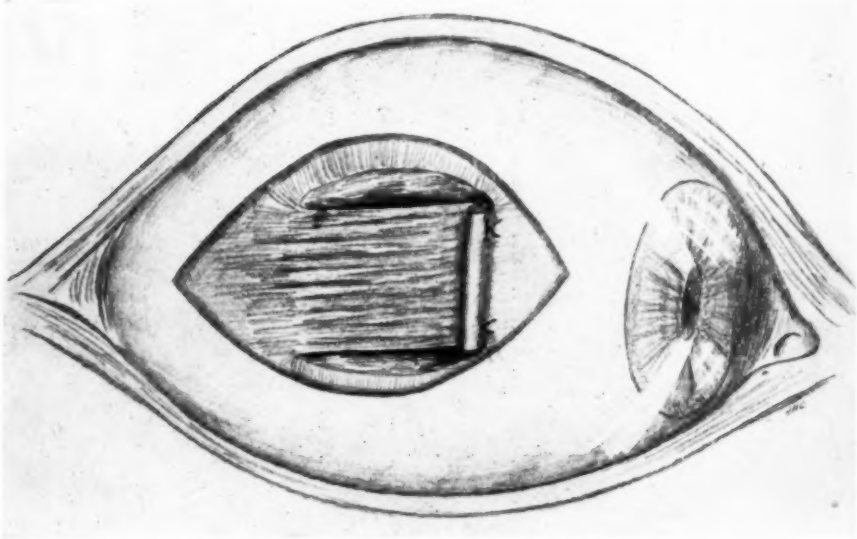

Fig. 5.—Tendon folded and instrument withdrawn.

muscle insertion, between the prongs of "folder," coming out well into the tendinous muscle insertion, Fig. 4. Two mattress sutures are used and should include more of the central portion of the muscle than is shown in the plates. Passing the needle between the prongs of the loop makes this step of operation very easy, with no danger of passing the needle too deeply, and insures a very accurate placing of the sutures. Only loosely tie a single knot in each suture, and then remove the instrument entirely. Then tighten this

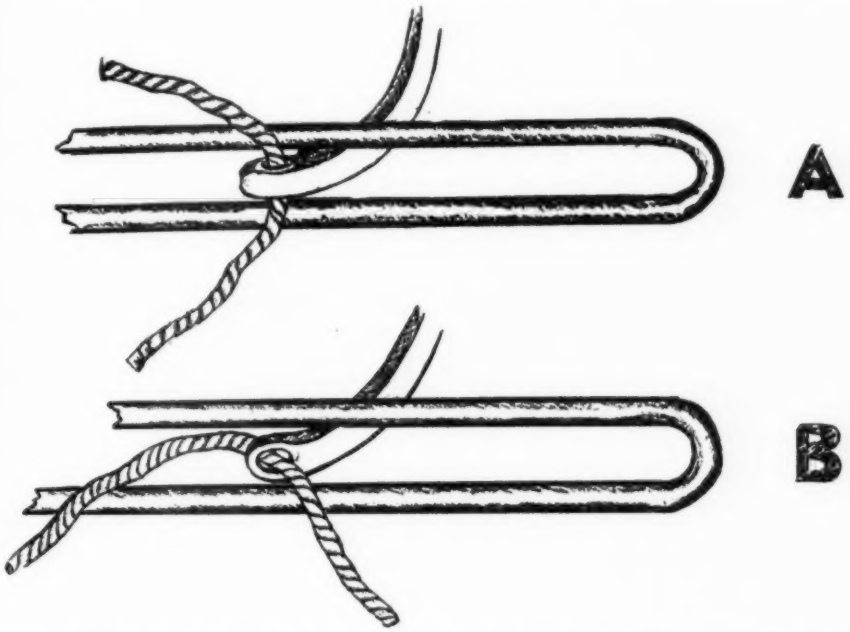

Fig. 6.—A, Ordinary needle with eye in plane of curve. B, Special form preferred, eye at right angles to curve.

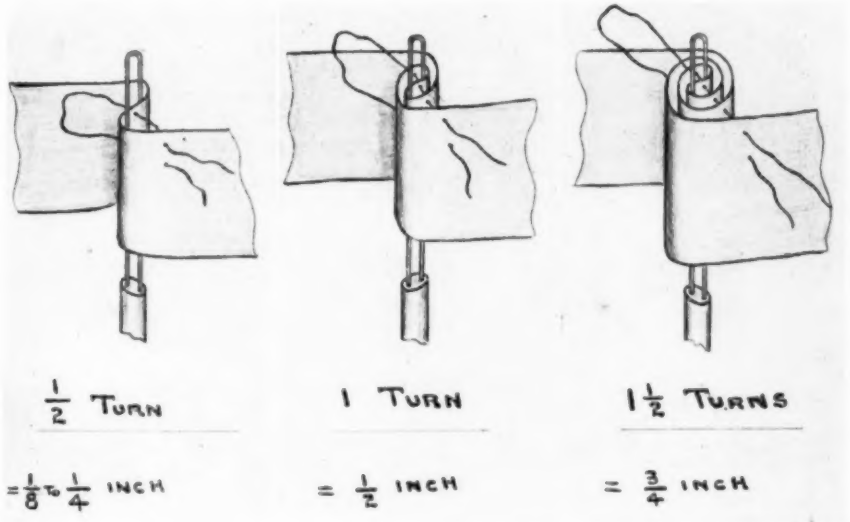

Fig. 7.—Showing approximate effect of different numbers at half turn and how sutures lock the folds together.

knot and tie the second half of knot. Cut ends of sutures off short, Fig. 5. Close conjunctiva with silk or gut or kangaroo tendon.

Fig. 7 is a diagram showing the number of half-turns of "folder" necessary to take up a given length of muscle. This is only approximate. This diagram also shows how the suture pierces the muscle several times, thus locking the folds together.

The disadvantages of this method are difficulty in using the "folder" on the internal rectus muscle and a possibility of leaving a "bunch" of tissue at the site of operation. In a limited use of the instrument in squint cases and upon the cadaver, the first difficulty has been overcome by having the handle of the instrument above instead of below the eye; and, so far, no tumor has remained at site of operation.

The instrument will be made by Mueller & Co., Chicago.

CHRONIC MILD IRIDOCYCLITIS.

DR. E. E. BLAAUW,

BUFFALO, N. Y.

This is the first of a series of "cases from practice," illustrating the pathologic appearances revealed by the corneal microscope.

In this article I try to describe the findings in a case of chronic, mild iridocyclitis, with the wish to show how much richer the picture has become since inspection of the eye can be done with the slit lamp. It is agreed that some reader may expect more details, but the circumstances did not allow more investigation, as the patient did not come under personal care, but was attended by another physician.

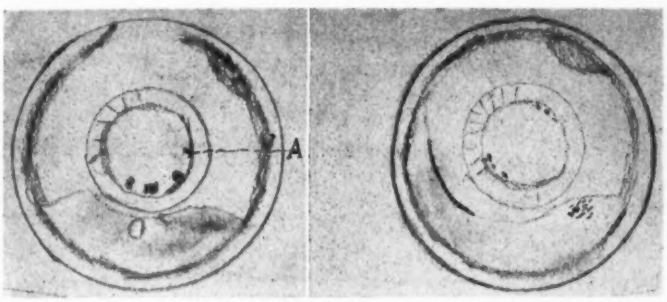

Fig. 1.—Extent and distribution of lesions in the right and left eyes.

Inquiry of the 50 year old patient brought out that he had suffered mildly with his eyes for the last 6 years, but had little cause for complaint since wearing spectacles.

A slight irritation called attention to his eyes. With ordinary focal illumination a well marked arcus senilis was seen, which did not entirely close the ring in the upper part of O. D. while in O. S. at about 1 o'clock a localized broadening was present. The lower part of the cornea shows in both eyes a region of density thru which the iris is pretty well visible. A sketch will show better than words the extent, while at the same time it demonstrates that both conditions differ slightly. (See Fig. 1).

The irides are blue with a well pronounced sphincter appearance. At both irides are some small synechiae, which do not prevent the normal contraction and dilatation to light and dark; some of these are white strands. Near them fine pigment granules are seen on the anterior capsule. In O.D. at about 3 o'clock a synechia (A) is seen, which in the dark is a small band: the part turned toward and adherent to the capsule is white; but toward the observer it is covered by pigment. When the iris contracts with light this strand folds up, elbow like, and projects in the anterior chamber.

The dimmed corneal areas seem a direct extension of the senile arcus; but I do not wish to convey the idea that this formation must be of the same nature as the arcus, as this condition is new to me. With the narrow slit, which is neces-

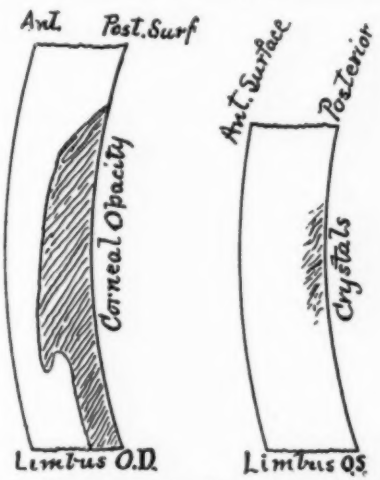

Fig. 2.—Diagrams of location and boundaries of opacities in the corneas.

sary to localise an opacity in the cornea (and in the other media of the eye), the opacity is seen to start from the arcus below, and very soon is seen to broaden and fill perhaps two thirds of the posterior parenchyma of the cornea. It ends upward in a kind of spur. (see Fig 2).

In the left cornea, at about the height of the line of the iris "collar," about 2 to 3 mm. from the temporal limbus, a more or less round spot, not well defined, (Fig. 1) shows by reflected light from the iris, and a heap of very fine lines, which with direct illumination and 50 diameters enlargement prove to be fine long needles. These have a distinctly different refraction from the surrounding tissue, and show varying color effects according to the way the light strikes them; chiefly red and green but not very pronounced. They are found in a layer in the parenchyma very near to Descemet's membrane (see Fig. 2). The direction of the needles is chiefly from the under nasal toward the temporal upper side. The needles in the upper part are replaced by fine points. The color, shape and fatty gloss makes one think of cholesterin crystals.

The upper border of the corneal opacity (the color of which is grayish-blue in ordinary light and with the slit lamp milky), is not of the serrated type, as described by Vogt in iridocyclitis, nor does it contain circular holes. (Graefe's Arch. v. 106, pp. 87-89). In O. D. above the dense area, pigment spots and fine fibrin deposits are found, less numerous in O. S., on Descemet's membrane.

Vogt has described needle shaped infiltrations in the cornea in a case of corneal granuloma: pp. 86-87, and as senile change, p. 79.

Regarding the distended posterior synechia described, see also Vogt in Graefe's Arch. v. 111, p. 100.

The fundi seem normal (not examined with mydriasis); the teeth are in a lamentable condition.

NOTES, CASES, INSTRUMENTS

SCREEN CELLULOID SCOTOMETER.

RALPH A. FENTON, M.D., F.A.C.S.

PORTLAND, OREGON.

Presented before the Sec. on Ophthalmology, A. M. A., San Francisco, June, 1923.

This tangent screen is made of gray, translucent dull surfaced celluloid, 50x 80 cm., affixed by thumb tacks to a light wooden frame of picture molding stiffened by brass angles, which can be readily attached to a phorometer bracket or other geared support, for use at 33 cm.

Its accuracy and novelty depend on three points:

1. Central aperture (2 cm. circle) thru which:

a. The observer can watch the examined eye for deviations following the test object, and thus eliminate a frequent source of error; and

b. The patient can fix easily, without distraction.

2. Record is made by chalk lines on the front or back of the screen. No marks or pins on the front need divert attention; and, when permanently recorded elsewhere, the chalk lines are readily wiped off with a moist cloth. To facilitate recording, a cardboard chart showing normal blind spots, radii, and tangent circles up to 55° laterally and 30° top and bottom, is held by clips to the frame behind the celluloid, when the markings may be set down on any convenient form, or be photographed after Lyster's method.

3. In addition to ordinary test objects mounted on 40 cm. slender gray handles, magnetizable test objects may be used as in Gradle's solenoid scotometer, so that no rod or moving hand enters the field of vision. The magnet is moved and positions recorded behind the screen.

INTRAOCULAR FOREIGN BODY.

Three Cases.

H. L. UNDERWOOD, M.D.

VANCOUVER, WASHINGTON.

The notes of the following cases is reported chiefly because two foreign bodies, with but one wound of entrance, must be relatively rare. The second is noteworthy in the nature of the accident and the (to date) happy outcome without operation. The third is reported partly because of the especially pleasing result after a very prolonged intraocular intervention; and also because of the patient's being a deaf mute, which introduced an element of uncertainty in the control of the case.

Case 1. J. R. a boy aged 14, was persuaded by a playmate to pound a dynamite cap, Feb. 28, 1923. Partial loss of three fingers and injury to the right eye resulted, the patient being cared for by a general physician, who found a piece of copper about 4 mm. by 3 mm. piercing the sclera to the nasal side of the cornea. This he removed. The next day I was called to examine the eye and found a clean-cut, straight wound, about 4mm. in length, involving the entire thickness of the coats of the eyeball. The media were clear, fundus visible and no hemorrhage or exudate, other than a slight cloudiness. The wound healed without infection and sight was unimpaired until Mar. 27, when the patient said that he could no longer see with that eye. Examination showed extensive retinal detachment of the loose, balloon type involving the nasal lower quadrant and shutting off the macula from view. Rest in bed, pressure bandage and atropin made no change.

Apr. 5th. Sclerotomy was done, followed by repeated instillation of a saturated solution of magnesium sulphat. Rest continued.

Apr. 13. Considerable recession of retinal sac and enlargement of the light field, but no distinct vision. Apr. 27. Sclerotomy repeated but without effect. Light limited to a small area above. A greenish yellow mass could be observed thru the dilated pupil in the lower nasal quadrant. No pain or discomfort or sign of infection at any time, and a white eye was present up to May 18, when the anterior chamber was seen to be irregular and the iris distorted tho free from adhesions. A radiogram May 18 showed a foreign body near the center of the vitreous (not accurately located). Enucleation was done May 22.

Section of the globe revealed an extensive encapsulated mass of greenish purulent material within the globe, washing out of which resulted in the discovery of a thin sliver of copper 2 mm. by 1 mm. This must have entered by the same wound as the larger piece found in the sclera at the first dressing, either as a separate piece or broken off from it after penetration, and carried by its momentum deeply into the vitreous.

The freedom from discomfort and almost total absence of inflammation, were in striking contrast to the extensive destruction within the globe.

CASE 2. Mr. C. K., while opening a soda bottle, June 20, 1921, felt something strike the right eye. No further trouble for about 18 hours, then he noticed some pain and sensitiveness to light and some congestion in the right eye. Upon consulting me, I found a mild ciliary congestion, but no foreign body in the cornea or lids and no wound or abrasion evident. Prescribed atropin and argyrol.

Two days later he returned, and I discovered a flake apparently of grayish green glass, about two millimeters in breadth (length uncertain), lying behind the iris and visible only when the pupil was somewhat dilated. It caused no disturbance of pupillary reactions, lay snugly against the lens capsule and could be easily seen both by reflected light and the ophthalmoscope. No disturbance of vision.

Seven months later (Jan. 30, 1922) the patient was again seen. He reported no symptoms or visual defect. V. O. D. 20/20 plus (the injured eye); O. S. 20/30 improved to 20/20 plus by correcting refraction. No irritation, pupil free and round. Tension normal. No change in position of the flake, which lay in the

horizontal meridian. No attempt at removal was deemed advisable.

CASE 3. Mr. C. H., age 34, Single, Deaf Mute. Feb. 3, 1921 was struck in the left eye by a steel fragment from a wedge which he was using. Wound of entrance 6 mm. from limbus, at the temporal side. He consulted me Feb. 6th, at which time vision was 6/10 in the affected eye.

Examination showed a cloudy vitreous with pigment particles but no hemorrhage. Tension not elevated. X-ray localization showed a foreign body larger than a pin head 14 mm. posterior to the cornea, 7 mm. below center and 2 mm. to the temporal side. The patient after consenting to operation at the hospital under a local anesthetic, suddenly objected when all ready for the table, declared that he felt no pain and could see and was going home. A half hour's leadpencil conversation and reference to the radiogram evidence finally convinced him; and the extraction was attempted under infiltration of novacain and instillation of cocain, using a large size hand magnet of the Sweet type. Application to the wound of entrance was futile, and a V shaped incision in the sclera with a Graefe knife was made and the magnet applied to the incision repeatedly. This also failed, and resort was made to the use of a long tapered angular iris scissors, applied to the magnet and inserted closed toward the estimated position of the fragment for a distance of 15 mm. or more. Numerous trials of this method proved futile, and meantime the magnet had become almost too hot to hold altho wrapped in a sterile towel.

Enucleation seemed inevitable, but a final trial succeeded and the steel particle, about 2mm. by 1mm. by 1mm. was removed.

The repeated trauma of these efforts at removal fortunately caused no loss of vitreous, and no infection or detachment of the retina occurred as might have been feared. At last accounts the patient possessed 20/20 vision in the injured eye. Bearing in mind the reticular structure of the vitreous, it seems likely that the churning effect of the repeated intraocular probing was a helpful albeit a risky procedure.

SOCIETY PROCEEDINGS

Reports for this department should be sent at the earliest date practicable to Dr. Harry S. Gradle, 22 E. Washington St., Chicago, Illinois. These reports should present briefly scientific papers and discussions, include date of the meeting and should be signed by the Reporter or Secretary. Complete papers should not be included in such reports; but should be promptly sent to the Editor, as read before the Society.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Section on Ophthalmology.

Dr. McCluney Radcliffe, Chairman.

March 15, 1923.

An Unusual Corneal Lesion.

Dr. Edwin B. Miller exhibited a woman, aged 61, who presented herself July 1, 1918, complaining of bad vision in the right eye. Examination O. D. showed an old adherent circular leucoma, 2 mm. in diameter, just inside the limbus at 6 o'clock. Vision R. 1/30; L. 5/30. Fundus examination revealed many flame shaped hemorrhages in and about the macular region. Under treatment this cleared up, and, with correction, V=5/6 in each eye.

On December 10, 1920, vision of the right eye was suddenly reduced to counting fingers at one foot, because of posterior uveitis with opacities. Under treatment vision improved.

On February 19, 1923, examination of the right eye showed no change; left eye vision 5/9; just inside of limbus, between 2 and 3 o'clock, there was a circular area, 4 mm. in diameter, slightly thickened on the margins and thinner in the center, vascular, and with a few areas of white infiltrate inside the circular area. From the opposite margin to the center of the cornea there was a very faint striated areola, about 2 mm. wide. One week later there was a still fainter gray striated areola reaching about 2 mm. beyond the first to the center of the cornea. These striated areas have nearly coalesced, but there is still a faint line of demarcation. The whole lesion is beneath the anterior epithelial layer of the cornea. Von Pirquet is positive. Wassermann is negative. Urinary analysis shows a trace of albumin and few hyalin and an occasional granular cast.

Dr. Miller said he had not been able to determine the diagnosis altho a nontypical form of disciform keratitis might be considered.

Discussion. Dr. William Zentmayer said that, while he had no experience of his own in such cases, he recalled that some years ago Dr. Randolph presented a case which resembled Dr. Miller's and represented probably an earlier stage of the same condition. There was some question as to the diagnosis, but the general opinion was that it was a hyalin degeneration. A year or two later Dr. Posey exhibited before the Section a case showing almost exactly the same condition as in Dr. Randolph's patient.

Dr. Posey advised cauterization by desiccation.

Alopecia and Poliosis of Lids and Brow.

Dr. William Campbell Posey, under the above heading, cited an instance of a young married woman, with moderate anemia, who lost all the eyelashes from the left upper lid in about 4 months' time. The hair of the rest of the body was unaffected. Cases similar to the foregoing, illustrative of the condition designated as alopecia of the eyelashes, by which is understood the partial or entire absence of the cilia due to conditions other than local inflammations of the lid, are rare. The literature contains quite a few instances of congenital origin. Dermatologists record the condition as occurring in leprosy, leucoderma, pityriasis and seborrhea. Syphilis is a frequent cause of alopecia, gumma of the lid depriving that structure of its lashes in a complete and characteristic manner; while the cilia may fall out without previous inflammatory symptoms, in association with the loss of hair in other parts of the body, which is so frequently observed in constitutional lues. In 136 cases observed in the early stages of syphilis, Wilbrand and

Stahlin found a loss of cilia alone in 5.1%; of brow alone in 8.8%, and a simultaneous disappearance of cilia and brows in 33.3%. J. T. Shoemaker reported an interesting case following an attack of measles; and thought it probable that the thyroid and gonads are at fault in many cases of alopecia. A number of authors observed the condition in association with Graves' disease. Michel asserts that the process is in all probability a trophoneurosis. The case reported by the writer is probably of this origin, doubtless associated with some obscure nutritional change emanating from disordered glandular function. Hysterical girls and insane not infrequently pull out the lashes and somtimes the hair of the brow and head.

Closely allied to alopecia is poliosis of the lids, a loss of color and graying and whitening of the lashes. This condition, which is not nearly so rare as the former, Dr. Posey illustrated by reporting an instance where the hair of the right eyebrow and the lashes of the corresponding side of the face became blanched during a period of three months, without known cause. Despite tonic treatment, etc., the condition persisted. Poliosis may be congenital.

In accounting for the discoloration of the lashes, Dr. Posey quoted Stellwagon's opinion that the rapid evolution of air vesicles in the hair follicles was probably the sublying factor. Altho very much more rare than one would be led to believe by the frequent accounts in the general literature of the hair becoming white over night from grief or shock; Dr. Posey cited well authenticated cases in medical literature where such had been the case. He gave notes of a number of cases where the cilia became discolored from repeated attacks of migrain, and also in association with painful affections of the eyeball, especially in sympathetic ophthalmia. He quoted Vogt's figures showing a connection between poliosis and some form of iridocyclitis, especially that due to sympathetic disease, as occurring in 39% of all cases in the literature. A number of instances have been reported as occurring in perfectly healthy individuals. In one instance, the discolorations came on over night; in others in a few days; while in others the period varied from 5 to 15 days to several months.

Discussion.—Dr. Jay F. Shamberg said that in the interesting presentation by Dr. Posey there were two aspects of the subject which had dermatologic bearing: The loss of hair or alopecia, and the whitening of the hair or poliosis, a condition more commonly referred to in dermatologic literature as "canities." Alopecia in patches may be due to two different types of causes. It may be due to an interference with the normal innervation of the hair, or it may be of microbic or of parasitic origin. There are in the literature authentic reports of epidemics of spotted baldness occurring upon the scalp, which have been reported both in this country and more particularly in Europe. Bowen and Putman in Boston have reported outbreaks of this condition in an institution for young girls, in one of which 63 out of the 69 girls in the asylum developed the affection. This is, of course, convincing evidence of the possible infectious nature of this condition. But such epidemics are rare and unusual, and the ordinary type of alopecia as we see it in practice is of nerve origin. The condition may follow shock, fright, grief and similar causes.

As experimental proof of the nerve origin of this condition, it may be said that Joseph in 1886, produced alopecia areata in cats by section of the cervical sympathetic nerve, and later two investigators caused the bald areas in other animals by excision of the second cervical ganglion. It would appear likewise, that some focal infections in teeth and tonsils and reflex irritation from impacted molars may, in some cases, be responsible.

The whitening of hairs is likewise a condition due to nerve influences. There was at one time considerable scepticism concerning the observation that the hair might "turn white in a single night", but in recent years, there has been ample confirmation of this observation. A number of individuals who

were under great mental stress in the recent war were observed to have their hair turn gray or white within a very few days. In my own practice, I saw a woman who was the eye witness of the accidental electrocution of her only child, who informed me, and the statement was corroborated by her husband, that her hair had turned completely white within two or three days following this calamity.

The loss of color is alleged to be due to an infiltration of the hair with air. Whether this is actually the explanation or not, is not definitely known. It would be difficult to apprehend how the entire pigment could be absorbed or lost within so short a period of time.

DR. BURTON CHANCE said he desired to place on record three cases which fell under the classes presented by Dr. Posey; two of alopecia and one of poliosis. Those of dropping out of the lashes and brows were, first, a lady, in her thirties, who, when she was a young girl, became affected after an attempted assault upon her by a ruffian. The other, the daughter of a physician and the wife of a physician, who had lost lashes, brows and scalp hair by the end of the week after the difficult and complicated labor with her first child. Nothing in the years which had elapsed had been of avail in either case to restore the lost hair.

The case of poliosis was seen in a young robust lady whose black hair, brows and lashes were changed to gray over night, several years previously, after witnessing the tragic accidental death of her father.

The Use of the Prism Scale to Neutralize and Center Spectacle Lenses.

DR. S. LEWIS ZIEGLER, in a paper published in full (p. 760), called attention to the fact that his prism scale had other uses than the measuring of prismatic strength. He had found it most useful as a daily help in neutralizing and centering spectacle lenses, and especially in testing bifocal segments for relative vertical decentration, which, if undetected, is so likely to produce an artificial hyperphoria for the patient.

His conclusions were "That if the superimposed lenses are held evenly before the junction of the two scales, and at exactly one meter's distance, it can at once be seen (1) whether the lens is properly neutralized, (2) whether it is accurately centered and (3) whether the prismatic strength is correctly measured."

Local Control of the Ocular Circulation.

DR. FRANCIS H. ADLER stated that the dependence of the intraocular pressure on the general blood pressure has long been known, and the effect of changes in blood pressure has been the subject of many investigations. Intraocular pressure follows qualitative changes in the blood pressure, but not quantitative always. This and many other facts have led to the assumption that there is a mechanism in the eye whereby the local pressure in the intraocular blood vessels could vary independently of the general blood pressure. It may be assumed that this local control of the ocular circulation is brought about by vasomotor nerves to the blood vessels, and many observers have attempted to prove the existence of such nerves.

In 1904 Henderson and Starling gave a critical review of the literature and by a series of well controlled experiments proved that stimulation of the head end of the cut cervical sympathetic caused a rise in intraocular pressure on the side stimulated. This rise was of sudden onset and short duration, and was followed by a gradual and more or less persistent fall below normal. The general blood pressure remained constant thruout the experiment. They proved that the initial rise was due to the contraction of unstriated muscle fibers surrounding the globe in Tenon's capsule, which fibers are supplied by the sympathetic. The fall in pressure they attributed to a constriction of the intraocular blood vessels, thru the agency of vasoconstrictor fibers in the sympathetic.

It is to be noted that all observers, including Henderson and Starling, drew conclusions of vasomotor activity from changes in intraocular pres-

sure. In 1912 Hill and Flack repeated these experiments, and altho they obtained identical results, they were unwilling to draw the same conclusions from them, on the ground that uncontrolled factors other than a vasoconstriction might give a fall in intraocular pressure. We would point out further that the fall in pressure in Henderson and Starling's experiments might be explained on the following basis; the compression of the globe caused by the contraction of the unstriated muscle in Tenon's capsule by raising the pressure might squeeze fluid out thru the normal avenues of escape. When the compression ceases, there would be a diminished volume of fluid in the eye, which would reveal itself in lowered intraocular pressure, persisting until the amount of fluid lost was made up from the blood stream. We see this clinically as the effect of massaging the eyeball, simple pressure on the globe, and repeated application of a tonometer. It seemed advisable then to attempt a series of experiments which would show conclusively the direct effects on the ocular blood vessels of stimulating the cervical sympathetic. For a full description of the method the original article will have to be consulted. It consists essentially in measuring the rate of formation of fluid in the eye at normal intraocular pressure, but with raised blood pressure. When a constant rate of fluid formation has been brought about, the sympathetic is stimulated, and the effects on the rate noted. If the blood pressure remains constant thruout, in the absence of other factors, the rate of fluid formation must depend on the size of the intraocular blood vessels.

The experiments were divided into two sets.

1. Those in which Tenon's capsule was intact.

2. Those in which Tenon's capsule has been cut completely thru around the globe, so as to destroy any effect of its unstriated muscle fibers.

In both cases it was found that stimulating the sympathetic caused a marked decrease in the rate of formation of fluid, which only gradually returned to normal. When Tenon's capsule was intact, there occurred during the first few seconds of stimulation a rapid increase in the number of drops formed, which was proved to be due to the contraction of the unstriated muscle fibers, as described by Henderson and Starling. The blood pressure remained constant thruout.

Conclusions. 1. A rise of blood pressure causes an increased formation of aqueous humor, even when the intraocular pressure is maintained at its previous normal level.

2. The rate of formation of this fluid is diminished by stimulating the cervical sympathetic—a fact which can only be adequately explained by constriction of the intraocular blood vessels. Whether this vasoconstriction is a factor in preventing sudden changes in blood pressure can only be determined by further experiment.

3. The effects on the unstriated muscle in Tenon's capsule, as explained by Henderson and Starling, are confirmed.

Unilateral Exophthalmos—A Clinical Report of Five Cases.

Dr. Karl Musser Houser, by invitation, reported five cases of unilateral exophthalmos studied and treated in the neurosurgical clinic of Dr. C. H. Frazier at the University Hospital. In each of the reported cases, different etiologic factors gave rise to the condition. In one the intracranial lesion gave rise to a train of symptoms of such a nature that a diagnosis of orbital tumor was made. Another demonstrated orbital abscess and the difficulty that may be experienced in correctly diagnosing the condition. A third case illustrated the proptosis that may appear where total ophthalmoplegia exists. Still another case demonstrated cavernous sinus thrombosis where extensive operative interference failed to give relief. A fifth case dealt with pulsating exophthalmos due to arteriovenous aneurysm, where subjective symptoms were relieved by carotid ligation.

Discussion. Dr. W. C. Posey said there was no more interesting field in ophthalmology than orbital surgery, and spoke from personal experience of Dr. Frazier's admirable technic in operating upon that region. Like

him, he had found the Krönlein procedure of great value, particularly since its modification by Magitot. Mucocele of the accessory sinuses of the nose had occasioned the majority of cases of unilateral exophthalmos seen by him, those of the ethmoid and frontal cells predominating. Graves' disease is an occasional cause of unilateral exophthalmos. X-ray is of great value in the diagnosis of orbital conditions, particularly in those complicating sinus conditions.

Dr. H. Maxwell Langdon said he desired to report the case of a colored man, age 39, who visited the clinic of Dr. Charles W. Burr at the Orthopedic Hospital on Monday, March 5, 1923, suffering from exophthalmos, bilateral and with loss of vision of the left eye, associated with impaired usefulness of the left arm owing to stiffness at the shoulder. Examination showed considerable rigidity of the left shoulder with much wasting of the deltoid muscles, making it impossible to lift the arm above the head. The right eye was found to have normal vision and to be normal in all particulars. There was a complete ptosis of the left upper eyelid. Pupil dilated and fixed and complete loss of ocular rotation, except a very slight intorsion resulting from a slight action of the superior oblique. Vision was lowered to faint light perception. Ophthalmoscope revealed media clear, disc normal in color and outline, with slight fullness of both the retinal arteries and veins. Hertel's ophthalmometer showed a proptosis of 13 mm. on the right side and 15 mm. on the left.

The cause for the disability in the shoulder was found on X-ray examination to be due to an old fracture. The loss of vision and loss of motility of the eye suggests some inflammation of the tissues back of the orbit. As the other eye was unaffected, it must be in front of the chiasm, and since the structures coming thru the optic foramen and sphenoidal fissure, are all involved in the process, it seemed most likely to be orbital. A Wassermann reaction of 4 plus suggested a gummatous involvement of the orbital tissues.

Steel Imbedded in Posterior Sclera.

Dr. H. Maxwell Langdon reported the case of a man, aged 23, who reported at the Presbyterian Hospital on January 30, 1923, with the history that he had been struck in the left eye by a small steel chip while working in a machine shop.

Examination showed right eye normal. A slight conjunctival hemorrhage to the nasal side of the cornea about 7 mm. from the limbus was noted in the left eye. Slightly down and in, could be seen the wound of entrance. Ophthalmoscopic examination showed some slight vitreous haze mostly localized down and in near the wound, while down and in from the disc was a patch of hemorrhage and exudate about 3 disc diameters from the disc, about 3x6 mm. in size. Vision 5/5.

The question to be decided was whether the steel had passed clear thru the globe into the orbit, had become embedded in the posterior portion of the sclera, or whether it had possibly struck the posterior portion of the globe and rebounded to be caught in the exudate in the anterior portion. It is quite obvious that treatment for the first two conditions would be very different from that for the last.

X-ray localization placed it in the sclera at the site of the posterior disturbance, and it was decided not to interfere with it. The hemorrhage in the vitreous completely absorbed, and nothing is left but a small patch of atrophy at the site of the injury.

Discussion. Dr. George H. Cross stated that Dr. Langdon's cases recalled to his mind that of a man with a foreign body just inside the sclera below the ciliary region, localized by Dr. Sweet. He decided to let the foreign body remain, and the man had had no trouble during the past four or five years. Vision remained normal.

Two weeks ago he had a case of foreign body in the vitreous, which had passed thru the sclera, about 8 mm. to the nasal side of the limbus. With the ophthalmoscope it was possible to see the foreign body and numerous hemorrhages on the retinal surface.

As it was a chip from the head of a chisel and not embedded, he removed the foreign body. Vision 20/30.

A third case of foreign body seen by him recently showed by X-ray a very small flake like body which had penetrated thru the lens stroma. It was impossible to draw this foreign body into the anterior chamber with a magnet. Examination revealed a small opacity on the anterior capsule of the lens, and on the posterior surface a large reticulated exudate similar to a snow crystal. This was gradually absorbing. This case and the one he presented to the College two months ago, where there was penetration of the anterior capsule without cataract formation, caused him to wonder whether it is the rupture of the anterior capsule or the rupture of the posterior capsule which precedes the formation of a traumatic cataract.

Dr. William M. Sweet said he had seen a number of cases similar to the one exhibited, in which there was an area of choroidal pigmentation to indicate the point where a small foreign body had penetrated the retina and choroid to become imbedded in the sclera or pass thru into the orbit. He recalled only one case in which a small piece of steel could be plainly seen imbedded in the retina, where it had remained for a number of years without causing any inflammatory symptoms or reduction in vision. The case was seen in the early days of the use of the Roentgen rays, when an exposure of from six to eight minutes was required to secure a shadow of foreign body in the eye. Several exposures were made, but, either because of the smallness of the body or the inability of the patient to hold the head and eye steady for the time of the prolonged exposure to the rays, no shadow could be secured of the fragment.

Dr. William Zentmayer remarked that Dr. Sweet casually mentioned a subconjunctival hemorrhage in one of his cases. While he had had no large experience in double perforations of the eyeball from foreign bodies, he had twice found subconjunctival hemorrhage as a symptom, and while he did not believe that its absence was of any value in differential diagnosis, yet its presence should lead us to suspect a double perforation.

Juvenile Cataract.

Dr. H. Maxwell Langdon reported a case of a boy, aged 7, who was first seen by him November 3rd, 1921 suffering from juvenile cataract. History of the patient showed that two years before he had been examined by an oculist and given glasses to correct a beginning convergence of the left eye. At that time no evidence of lenticular changes was noted.

Examination showed no external changes, O. D. V. 5/10, corrected to 5/6; O. S. V. 5/15, corrected to 5/6 plus. Both lenses showed striae down and in, especially the left eye, which seemed to be more in the posterior cortex. The media were otherwise clear and no fundus changes observed. He was referred to Dr. Ralph Pemberton at the Presbyterian Hospital for metabolic studies and a general physical examination. A very complete examination was made of the blood chemistry, urine and in fact the child's whole make-up. Nothing was found wrong except a rather high blood sugar, which was 150 milligrams to 100 centimeters of blood, and very bad, infected tonsils. The tonsils were removed, and while there had been some progress in the lens change from November 3, when first seen, and December 22, since February 9, 1922, there had been no advance whatsoever. Vision of the right eye remained 5/5 partly, left eye 5/7.5. Dr. Pemberton found, and this has been confirmed by the other workers, that a focal infection such as infected tonsils, apical abscesses of the teeth and so on, will produce a departure from the normal of the blood chemistry for carbohydrates, in other words, an increase in the blood sugar and a lowering of the tolerance for sugar, and when this focus of infection is removed the blood sugar chemistry will return to normal. Burge has found that lenses with an excessive sugar exposed to light will become cataractous. The cessation of progress of the lens changes suggests that possibly the infected tonsils by

lowering the ability to assimilate starches may have been the cause.

Squint Operated on by the Recession Method. A Case of Anophoria.

Dr. Warren S. Reese exhibited first, a squint case operated on by the recession method. W. C. had a convergent squint of 40°, the left eye squinting. A recession operation was done on the left internus, at the completion of which the visual axes were nearly parallel. They were the same four days later. The bandages were then removed because of a conjunctivitis, and when next seen there was convergence of 10° to 15°. Ten days after operation the squint was measured, and there was residual convergence of 18°, in other words the recession operation had taken care of 22° of the squint. A Reese resection of the left externus was done and the patient's visual axes are now (two months after operation) parallel, the corneal images being exactly symmetric for distance. The method employed in doing this recession was as follows: The left internus was exposed, and advancement forceps applied, and the tendon severed as in an advancement. The muscle and tendon were then freed from all their attachments to Tenon's capsule. One end of a double armed suture was then passed thru the superficial layers of the sclera, about 6 mm. or 7 mm. back of the original insertion, the needle being carried thru parallel to the limbus. Both ends of this suture were then brought out thru the end of the severed tendon then thru the conjunctiva over which the suture was tied. The conjunctival opening was then brought together with the two interrupted sutures. In this case there is slight limitation of adduction of the operated eye but no sinking of the caruncle such as is seen after a tenotomy.

Anophoria.

H. J. A. Both eyes are up under cover, the movement in the right, however, being more of a clockwise rotary motion, when uncovered. With the Maddox rod over the right eye there is right hyperphoria, and with the Maddox rod over the left eye there is left hyperphoria. Altho the left eye is more markedly up under cover, the right hyperphoria is greater than the left hyperphoria.

Stevens states that this condition results from the type of cranium, thus in the mesocephalic type, and especially if the line of the face is that of orthognathism, the rotations are so generally high that as a rule there is anophoria. He also says that anophoria does not indicate a weakness or overaction of any muscles, but is an adjustment coincident to the type of head. Later, however, he says that he is convinced that, in explanation of the phenomenon of each eye deviating, we are to look to the declination, for when by tenotomy the upward rotation of anotropic eyes has been reduced to the standard of 33, the eyes will still squint upward in exclusion. On the other hand, if the extreme declination is materially reduced, the upward deviation ceases. We may regard the deviation as synergic. With the adjustment of the fixing eye to correct an extreme declination, the forcible action of the superior oblique may be demanded. With this strong action the fixing eye is depressed, but to counteract this depression in order to effect fixation at the horizon, the superior rectus comes strongly into action. Simultaneously and synergically with this the superior rectus of the excluded eye acts, but since there is no occasion for the depressing action of the oblique, that eye is raised. This later explanation seems very plausible. In the few cases of anophoria the writer has seen there has always been a torsion movement of one or both eyes, indicating that the oblique muscles were in some way responsible or involved in this anomaly.

Three Cases of Family Cataract.

Dr. McCluney Radcliffe exhibited three little girls, aged five, eight, and ten years of age, with hereditary congenital cataracts in both eyes. The line of heredity was on the mother's side, as the grandmother, twin sister of mother, and her brother also had cataract. The interesting feature in the cases was the excellent results following the "thru and thru," or Ziegler

operation. The operation consists in making a V shaped incision thru the entire lens including the posterior capsule. There was no reaction following the operation, except one eye, and that yielded rapidly to appropriate treatment. He strongly advocated the operation as a safe and efficient surgical procedure.

Discussion. Dr. S. Lewis Ziegler stated that Dr. Radcliffe should be congratulated on his excellent results in six complete V-shaped discissions of congenital cataracts. It is evident that the slow solution of the lenses was due to the presence of calcareous material in the cortex. He was glad to know that Dr. Radcliffe could verify his statement that thru and thru incision of the lens is practically free from reaction. The one eye that has been slow in dissolving shows evidence of closure of the cystic wound, which has caused localized pocketing or encapsulation of the cortex. He will either have to repeat the discission or perform a paracentesis, as the cortical matter will not dissolve without some encouragement. In all the other eyes the pupillary area seems to be quite clear of lens cortex.

C. E. G. Shannon, Clerk.

THE NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.

May 21st, 1923.

Dr. M. M. Cullom, Presiding.

Pseudoglioma.

Dr. W. G. Kennon presented the case of Mr. A. O. P., aet. 22, giving the following history: March 1, 1922—About half an hour before, while playing basketball, was struck in left eye by some one's hand or elbow. A few minutes afterwards noticed that he could not see with left eye; no other symptoms.

Examination showed marked ecchymosis of left lower lid; cornea and lens clear. On focal illumination, a reflex from a blood clot was obtained below and to the nasal side, in the vitreous. Ophthalmoscopic examination showed the retina visible above and temporally. The vessels appeared very full. The nerve could not be seen. The eye is soft on palpation. Pupil does not react to light, but the consensual reflex is present. The eye is absolutely blind, not even light perception being present. Gave dionin 5 per cent.

March 10. Eye quiet; no change. April 26. Eye quiet. Patient told that in all probability eye would remain in statu quo unless it diverged. July 18. No change.

April 15, 1923. Following a bad cold, eye has been inflamed and painful. Examination shows the iris slightly congested; pupil irregularly dilated; not reacting very well to consensual reflex. Tension normal. Lens clear. Vitreous anteriorly slightly hazy. The entire posterior portion of the globe seems covered with a yellow exudate, anterior to which there is a slight red reflex of fresh hemorrhage into the vitreous. The condition is typically pseudoglioma, due to (probable) suppurative choroiditis. Atropin instilled and hot applications ordered. Expectant attitude. Probable enucleation.

April 20, 1923. Hot bathing caused pain, so was discontinued.

April 27. Seen by Dr. Hilliard Wood, who advised enucleation, concurring in diagnosis.

April 29. Vitreous more cloudy. Slight anterior chamber hemorrhage. Advised enucleation of eye, as it can be only a source of pain, with ultimate necessity for removal some time in the future.

In presenting this case, Dr. Kennon said that in spite of the appearance of the eye, and in spite of the history, the condition had not gone on to panophthalmitis, such as would be expected from the appearance. He had advised enucleation largely on the basis of "eventually, why not now?" The eye certainly will go on to degeneration and shrinkage, and this argument was used in advising patient to have enucleation. The other argument was that any chronic inflammatory process in the eye without the formation of frank pus carries with it the danger of sympathetic ophthalmia. While he does not consider this danger very great,

yet it is worth considering in any eye totally blind.

Discussion. Dr. M. M. Cullom said that to him this appeared to be a dangerous eye, and would be safer out. He believed enucleation the wisest course to pursue.

Dr. Hilliard Wood agreed entirely with the statement of Dr. Kennon. To him this had seemed to be a case of purulent choroiditis that had stopped just short of panophthalmitis. Usually he associated the idea of purulent

Fig. 1.—Vernal catarrh upper lid everted showing large granulations.

choroiditis with panophthalmitis, thinking of them as synonymous, and often they are synonymous. But this was of a milder type than is usually gotten in panophthalmitis, due possibly to some milder form of infection. He, too, advised enucleation.

Dr. Fred Hasty said that Dr. Wood had some time ago given to him a working rule, which he had never known to fail, i.e., an eye totally blinded by injury is better out than in. He believes this rule holds good in the case under discussion.

Vernal Catarrh.

Dr. E. B. Cayce exhibited the following case:

W. A. R., male, aet. 13. Previous history: Diseases of childhood; otherwise has always been well, with the exception of some eye discomfort last spring, that apparently cleared up when summer was well established. Present illness: Began about the middle of March, having some discomfort in eyes, with repeated hordeola.

Examination showed a large hordeolum on right upper lid. On everting the lid, he found the largest mass he had ever seen in a case of vernal catarrh, and it was the extremely large and coarse appearance of the upper lid that was the occasion for showing this patient.

A smear from the eye was reported to show numerous eosinophiles, which, together with the history, establishes the diagnosis of vernal catarrh.

Dr. Cayce said that personally he had never found anything that seemed to noticeably improve these cases. Where the granulations are exuberant, he believes grattage to be the most satisfactory remedy, as it smooths them down a little; however, they tend to recur.

Discussion. Dr. W. G. Kennon had seldom seen cases of vernal catarrh with changes so marked as in this one. He had seen Dr. Greenway shave these granulations with the Beer knife, but they return. Radium has been tried, but is of uncertain value. As the disease is most troublesome in hot weather, bathing the eyes with cold lotions gives some comfort.

Ocular Injury—Malingering.

Dr. W. G. Kennon presented the case of Mr. A. V., aet. 31, who was first observed by him February 15, 1923. History: Injury above left eye March 3, 1922, by falling ice can. Three days later a piece of frontal bone was removed from the region of the wound above the orbit. Poor vision in left eye from time of accident, which vision patient now states is reduced to light perception. Vision of right eye varies a great deal. Complains of pains in various parts of body.

Examination: R.: Vision 20/200 (?) L.: Vision 0. Right negative to examination. Left: There is, far back in the upper outer quadrant, at about the region of tendon insertion of the external rectus, but above it, a marked tumefaction of the conjunctiva, as if probably there were a subconjunctival foreign body. The rest of the external eye is normal. The pupil is widely dilated, and does not respond to light. The fundus is apparently normal. Pa-

tient states that he has not put any drops in left eye for several months. Advised hospital observation.

April 17. Patient returned yesterday for observation and treatment in St. Thomas Hospital. He states that he is somewhat improved in his general health since previous visit.

Examination shows right eye apparently normal. Left eye shows no change. Patient states that he put some drops in left eye one week ago. The pupil is dilated, but there is a slight contraction to light. The consensual reaction in the right eye is well marked. The left fundus was examined by Drs. Hilliard Wood, Fred Hasty, Leslie Bryan and J. J. Frey, who agreed that it was apparently normal, and advised that malingering tests be used. Patient was advised to have growth on left eye removed.

April 18. Operation under local anesthesia by Dr. Robert J. Warner. Entire growth removed, including overlying conjunctiva. The growth was exceedingly tough; removal accomplished without difficulty. Conjunctiva sutured over raw surface; eye dressed. Portion of growth felt very hard after removal, as if it might be a plate of bone. Specimen sent to laboratory for examination. The pupil of the left eye is distinctly smaller today and reacts promptly to light, both direct and consenual.

April 21. Pupil of left eye is now normal in size. Reacts promptly and normally to light and accommodation. The consensual reaction on both sides is prompt and unmistakable.

April 24. Discharged from hospital. Examination at office reveals vision of right eye 20/100 and left eye 20/100. Patient is unquestionably malingering, but says left eye greatly improved since operation.

Discussion. Dr. Fred Hasty strongly suspects that if patient could be made to understand he is not going to get any more compensation he would perhaps improve very soon.

Dr. Leslie Bryan said that to him this case appeared very much like a great many compensation cases which had come under his observation, i.e., they are very difficult to trap. He could find nothing in this fundus except a slight choroidal ring around temporal side of disc. Speaking of malingering tests, he suggested the use of the Bishop Harman test. Instead of this, however, he often uses the stereoscope, together with Oatman's Fundus Oculi, placing a blank over the unaffected eye and leaving some picture in front of the affected eye; in this way he has detected several malingerers.

Dr. Hilliard Wood said that the patient evidently had pathology, as proven (1) by the history; (2) by the removal of the piece of supraorbital arch of bone; and (3) by the subconjunctival mass between the superior and external rectus muscles, just in front of the equator. He could find no intraocular pathology. This case impressed him, as do many of these injuries that are subject to compensation, as being one in which the patient had been injured, but had, for financial reasons, exaggerated the results of the injury. Dr. Wood believes that all such cases should be regarded as being more or less malingerers, and should be examined with that fact in mind, because in the final settlement the evidence of the ophthalmic surgeon contributes materially to the fixing of the amount of damage. Therefore the examination should be most carefully carried out, in order that a report may be made which will not do an injustice either to the patient or to the company by whom he is employed.

Subhyaloid Hemorrhage.

Dr. M. M. Cullom presented the case of Mrs. E. D. E., which is published in this Journal v. 6, p. 759.

Discussion. Dr. Robert J. Warner thought Dr. Cullom emphasized the three cardinal points in diagnosis, which were not generally brought out in the text books. He recalled having seen two similar cases. On account of the location of this hemorrhage, over the macular region, the prognosis as to vision might be bad. There is no specific treatment for this condition, the usual treatment being rest in bed and iodides.

Dr. W. G. Kennon was of the opinion that the prognosis in these cases is usually very good.

Dr. Cullom said that the patient's general condition had improved to some extent. The portion above the horizontal line had cleared up distinctly. The dark gray appearance of the retina above the horizontal line had cleared up a great deal. He believed the prognosis to be good in this case, from the fact that the hemorrhage is in front of the retina and in clearing up will leave the retina intact. In answer to question from Dr. Price, he believed the condition to be the result of influenza and tonsillitis.

Hilliard Wood, Editor.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

July 10, 1923.

Injury to Eye.

Dr. E. C. Ellett presented Mr. W. B. B. On April 30th was struck in left eye while hammering on piece of steel. Following day small scar could be seen in the center of cornea, cloudy lens with no reflex. Vision, moving objects at 4 feet. X-ray picture was taken and showed that the left eye contained a piece of steel, size 1 1/2 by 1 mm., 5 mm. above the horizontal plane of cornea, 3 mm. nasal side of vertical plane of cornea, 16 mm. back of center of cornea. May 1st applied the giant magnet, which drew the foreign body into anterior chamber behind the iris, up and out. Usual incision made at the limbus with keratome in region of foreign body. Iridectomy, and the foreign body was delivered with small magnet thru iridectomy wound. Four days following magnet extraction the eye was hard, anterior chamber filled with black blood mixed with lens matter. Morning and night for four days following magnet extraction limbus wound was opened with spatula. Lens matter mixed with blood was delivered to relieve tension. Since then eye has had very little pain at times and the tension has been practically normal. On July 5th left eye vn. 4/200; with plus 10, 20/200. Thick, secondary membrane, no reflex. July 6th, iridotomy done, down and out, dicission secondary membrane with Ziegler knife, and today with plus 12.75 with plus 50, axis 150, 20/15. Add plus 3, J. No. 1. Eye quiet. Ophthalmoscopic examination, fundus normal, seen best with plus 12.

Glaucoma.

Dr. Ellett reported this case operated on 13 years ago.

Mrs. H., aged 50, was seen October 25, 1910. For nearly three weeks she had been ill, the main feature of her illness being a pain in the right side of the face and right eye, and an abscess in the right ear. For four days the eye had been more painful and the vision very dim. The eye presented all the signs of inflammatory glaucoma, with tension +3, this being before the tonometer was in use. The eye improved very much under treatment, but then got worse. On October 30th, an iridectomy was done under ether. A week later, while still in the hospital, a similar trouble developed in the left eye, for which an iridectomy was done on Nov. 7th. The immediate result, i.e., Dec. 9th, was vision, 20/80 in O. D. and 20/30 in O. S. The right nerve looked pale. June 11th, 1923, she reported both eyes well since the operation, i.e., no pain or trouble of any kind. Both eyes are white, with normal tension and an upward coloboma. In every other way O. S. is normal. O. D. shows a capsular opacity in the upper part of the coloboma and a decidedly pale but not cupped nerve. Vision 20/80 P. and 20/20 mostly, and J. 12 and J.2. The difference in results in the two eyes seems to be due to the fact that the tension was allowed to remain elevated in the right eye, and as the result of this pressure being kept up, the optic nerve atrophied. I have seen exactly the same thing happen before. In the left eye the increase of tension lasted so short a while that no permanent damage to the nerve resulted. One can conclude, therefore, that early operation is indicated in those cases of acute glaucoma in which the tension is not promptly reduced by treatment.

D. H. Anthony, Sec.

COLORADO OPHTHALMOLOGICAL SOCIETY.

April 21, 1923.

Dr. J. J. Pattee, Presiding.

Keratoconus.

M. L. Twyford, Boulder, for Drs. Spencer, La Rue, and herself, presented a woman who had a fairly pronounced keratoconus in each eye, but more marked in the right. The vision of the right eye was improved by correction from 6/60 to 6/15, that of the left eye from 6/15 to 6/5 plus 3. Examination had been made under homatropin. In addition to correcting lenses the patient had been given a prescription for liberal doses of mixed glandular extract, and also for pilocarpin locally; and a consultation to determine the status of the internal secretory organs had been advised.

Discussion. Melville Black, Denver, was surprised that no higher cylinder than 2 D. had been accepted.

Edward Jackson, Denver. The trial was made under homatropin. In conical cornea, to get the most practicable glasses it is necessary to test with the pupil undilated. The center of this right cornea is myopic, and yet it is possible that the periphery is hyperopic. I have frequently used pilocarpin to reduce the pupil to two or even one mm. in order to correct the center of the cornea.

Dr. Spencer remarked that the patient had been given her correction after post-cycloplegic examination.

Dr. Black. This patient is like a good many other patients with conical cornea in that she appears very well nourished, and it is difficult to understand why the cornea should have given way. For a preliminary working out of the astigmatism and its axes, the stenopaic slit is extremely useful.

C. L. La Rue, Boulder. Several years ago we saw in consultation with Dr. Black a case which progressed very rapidly. The patient went back east, and Dr. Verhoeff cauterized both corneas; and the patient still has a lot of opacity in each cornea from those operations. Dr. Verhoeff afterwards did an iridectomy. Yesterday she could read the big E with one eye at two inches, and with the other eye at three feet.

Dr. Jackson. One beneficial effect of careful correction in these cases is that it helps to break the patient of the habit of squeezing the eyelids against the cornea, which I believe is an important factor in making the condition worse. I have recently seen a man with high conical cornea whom I first saw eighteen years ago. He has used pilocarpin practically ever since. He completed his education and has taught for many years. He has had corneal opacities which were temporary and cleared up, and he has had several ulcerations, which still left him able to teach and go around freely. Within the last year he has had several operations on the thyroid gland, and since these operations he has gained fifteen or twenty pounds, feels in very much better health than before, and his vision has been improving.

I have also recently seen a patient whom I first saw twenty years ago. She did not have conical cornea at that time, but developed it later. I had not seen her for eight or ten years, and she came back with the statement that one eye had been operated upon, had done badly, and had been enucleated. The vision in the other eye is 1/10 or less with correction or without. She had been in decidedly poor health much of the time, until a year or two ago, after a series of abdominal operations, she got into decidedly better health. Since then her vision has about doubled.

In another case there was a history of active malaria while the conical cornea was developing. Things got worse until she went under the care of Dr. Arndt for metrorrhagia, and the uterus was removed. Immediately the eyes began to improve. The conical cornea got visibly better, and she now has very fair vision. A year ago Dr. de Schweinitz said that his experience was that cases which had been carefully handled with proper glasses did just as well as any case in which a local operation was performed.

J. A. McCaw, Denver. With dilatation and contraction of the pupil the refraction of these cases varies greatly. The cases I have had seem to do very well

under pilocarpin, because the refraction is more constant.

W. H. CRISP, Denver. For estimating the astigmatism in these cases, by far the most useful test is with the cross cylinder, especially as regards the axis. On account of the relative amblyopia, however, it may be necessary to use the stronger cross cylinders, even as strong as minus one sphere combined with plus two cylinder.

Dacryops.

W. C. BANE, Denver, for himself and W. M. Bane, demonstrated a cyst which had been removed from a negress who had been presented to the society on December 16, 1922. The patient had had monocular trachoma, which had shown marked improvement following operation on the lids with roller forceps. But she later developed a two-lobed swelling of the upper lid. The cyst was cut, but refilled in a month and a half. On February 14, the cyst had been dissected out with great difficulty thru a horizontal incision. After the cyst had been completely removed, it was discovered that a rent of about eight mm. in length had been made thru the conjunctival surface, exposing the eyeball. Apparently some of the fibers of the levator palpebrae superioris had been severed, for the patient was found to be hardly able to raise the lid at all. There had been a gradual improvement of this condition.

Discussion. C. E. WALKER, Denver. If you are going thru the upper lid to remove any tumor, the better way is to hug the tarsus, and then reunite the flap to the tarsus. This will avoid ptosis.

Lacerated Wound of Eyeball.

W. M. BANE, Denver, for himself and W. C. Bane, presented a man, aged twenty-four years, who while cutting a key on April 14, had been struck in the left eye by the end of the key. The patient believed that the steel had fallen to the ground when he had stooped over. He was seen the next afternoon, when the vision of the injured eye was completely gone. There were two wounds thru the sclera on the nasal side of the cornea, with vitreous escaping from each, one of the wounds passing thru the ciliary body. The anterior chamber was full of blood. The magnet produced no foreign body. X-ray examination was negative. The eye had given very little pain, but had shown no tendency to improve, the blood in the anterior chamber remaining unabsorbed, the tension low, and vision nil. It seemed probable that the eyeball should be taken out, on account of the danger of sympathetic ophthalmia.

Discussion. C. E. WALKER, Denver. I should advise the patient to have the eye removed, on account of the danger of sympathetic ophthalmia from the wounds which penetrate the ciliary body.

Several other members expressed the same opinion.

Pituitary Disease.

C. A. RINGLE, Greeley, presented a man, aged thirty-nine years, whose sight had failed when he was nineteen years old. With the rapid failure of vision, he had had attacks of vertigo, tinnitus and vomiting. There had also been epileptiform attacks, more frequently in the night, but sometimes during the day. These seizures had been worse in the spring and early summer, and at these seasons the patient was more irritable. The patient was now totally blind. The optic discs were atrophic. There was nystagmus. The head was very large, but the appearance of the lips, lids, and nose offered no positive suggestion of acromegaly. The fingers, hands, feet, and joints were normal. The voice was natural. The weight of the patient at nineteen years had been one hundred pounds, and the present weight was one hundred and ninety pounds. A Wassermann test had proved negative.

Discussion. EDWARD JACKSON, Denver. The man seemed to me to suggest the pictures of patients suffering from Fröhlich's syndrome. It might be worth while to investigate along this line.

Pseudooptic Neuritis?

D. A. STRICKLER, Denver, presented a girl, aged seventeen years, who had come on account of symptoms of probable eyestrain, including frontal headache. She had been wearing minus cylinders, but had compound hyperopic astigmatism. In spite of correction of the refractive error the headache had continued. The left optic disc was rather prominent and

the outlines decidedly blurred, suggesting an optic neuritis. The appearance of the disc had not changed in the course of two weeks observation. X-ray examination showed slight cloudiness of the left sphenoid. Tonsillectomy and adenectomy had been advised, and also possible operation on the nose.

Discussion. EDWARD JACKSON, Denver. The field of vision might be taken, and the case watched for a length of time. It impresses me as probably a case of anomalous disc. The look is very much that of opaque nerve fibers, but it is all behind the vessels. If it is an anomaly, it is one of the pseudooptic neuritis cases, which differ greatly from one another.

Obliterated Retinal Artery.

H. R. STILWILL, Denver, presented a colored man, aged forty-eight years, on account of obliteration of the superior temporal artery of the left eye.

Discussion. W. C. FINNOFF, Denver, referred to a case of extensive involvement of the arterial and venous trees of both eyes. The patient was a sufferer from interstitial nephritis, and had a blood pressure of over two hundred mm. of mercury. The only evidence of bloodstream was in the smaller vessels toward the periphery.

MELVILLE BLACK, Denver. In Dr. Stilwill's case it looks as tho there were much new tissue along the vessels. At first the streak looked to me like a white exudate, and then it appeared to be an obliterated vessel. The arteries and veins seem to have about their normal relationship.

W. C. FINNOFF. It might be well to examine the fundus with red free light. This might show some minute deposits or small hemorrhages before ordinary light would do so.

Retrobulbar Neuritis from Sphenoidal Disease.

E. B. SWERDFEGER, Denver, presented a boy, aged seven years, who had come on October 21, 1922, complaining of a falling off in vision. The eyeballs were sore. The vision of the right eye was 5/12, the left 5/10. Approximately normal vision was obtained in each eye with a moderate spherical correction. On February 1, 1923, the mother stated that a school examination had shown the vision of the left eye as inferior to that of the right. The vision of the left eye was 5/15, not improved with glasses.

There was a slight constriction of the vessels at the lower margin of the left disc. All examinations were negative. On February 19, the vision of the left eye had fallen to 5/30. Some of the retinal vessels were engorged. Urinalysis was practically negative, a blood Wassermann entirely so. X-ray study showed haziness in the right sphenoid. The right visual field was normal, the left field greatly restricted to the nasal lower and temporal sides. The sphenoidal sinus was opened on February 26, 1923, and on March 1, 1923, the vision of the left eye without correction was 5/5, and the field practically normal. These conditions had persisted.

Discussion. G. F. LIBBY, Denver, remarked that the case was a striking example of focal infection of sinus origin.

W. C. FINNOFF, Denver. A year and a half ago I mentioned the case of a young lady with retrobulbar neuritis, in whom the vision improved rapidly after opening the nasal sinuses and removing stumps of tonsils. We thought that the case was merely one of focal infection. Two months ago I was called to see this patient for a diplopia and partial facial paralysis, with some dizziness, some paresthesia of one side, and some difficulty of speech. There was a paralysis of the left external rectus and a weakening of the right superior oblique. Most of these symptoms have since improved. It is necessary to remember that these cases of retrobulbar neuritis are sometimes due to multiple sclerosis, that the symptoms may clear up, and that we may later have a transitory paralysis of some ocular or other muscle which in turn may disappear, to be followed later by other symptoms of multiple sclerosis. However, Dr. Swerdfeger's case is apparently definitely one of sinus disease.

C. E. WALKER, Denver, suggested that we had to deal with a number of cases of late complications from influenza.

Orbital Tumor.

On behalf of H. R. STILWILL, Denver, W. H. CRISP presented the case reported

on at the previous meeting. The left eye had shown a steady increase of protrusion, with progressive hyperopia, and disturbances of the retinal veins and optic disc. The case was regarded as probably one of orbital tumor, pushing forward the posterior pole of the eye.

Discussion. EDWARD JACKSON, Denver, remarked that some of the retinal vessels showed twelve to fifteen diopters of hyperopia, and that the disc protruded four or five mm. beyond the general fundus. It looked like a case of tumor pressing on the eye and the vessels, but not within the sheath of the nerve. There was apparently more prominence of the disc than a month previously.

Uveitis, Possibly Tuberculous.

W. H. CRISP, Denver, presented a woman, aged twenty-six years, whose right eye was blind. The eyeball was extraordinarily soft and the anterior chamber very deep. There was moderate pericorneal congestion, and the eyeball was fairly painful to touch. The condition had first been noticed by the patient about two weeks previously; and she had been given atropin by a local oculist, but had subsequently gone to a general physician on account of the absence of the oculist from her town. No atropin had been used since the first day or so of treatment, and the pupil was adherent to the anterior capsule. There were a good many deposits on the anterior capsule. The cornea was hazy and there were a large number of folds in Descemet's membrane. Remarkable features of the case were an extreme softness of the eyeball, so that absolutely no sense of resistance was conveyed to the palpating fingers, and the apparently great depth of the anterior chamber, the iris seeming to lie at a great distance from the cornea. The fundus reflex was present, but except for vitreous floaters no fundus details were visible. The patient was apparently in the best of general health, and no clue was furnished by the personal or family history.

Discussion. C. E. WALKER, Denver. To me this is a case of cyclitis, unnoticed at first by the patient. Such softening of the eyeball may come on gradually. I should look for focal infection.

G. F. LIBBY, Denver, suggested that tuberculosis should be thoroly looked for.

W. C. FINNOFF, Denver. There is uveitis, because there are fine deposits on the lower portion of the posterior surface of the cornea. The striations I believe are due to folds in Descemet's.

WM. H. CRISP,
Secretary.

SOCIÉTÉ D'OPHTALMOLOGIE DE PARIS.

December 16, 1922.

DR. POLACK, President.

DR. BAILLIART, Secretary General, reported on the work of the Society for the year 1922. Dr. Polack, the retiring president, presented his successor, Dr. Coutela, who introduced Dr. Gallemaerts of Brussels an honorary member, and gave a short inaugural address.

Radiography in the Diagnosis of Orbitoocular Complications of Sinuitis.

DR. G. WORMS, Val-de-Grace, read a paper on this subject illustrating by radiograms. Altho the sinuses as cavities filled with air would seem to promise great visibility with the X-rays, the conditions they offer are really unfavorable because of the anatomic complexity of the bony parts. He was convinced that radiography would give, however, not only the form, volume, relations and anomalies of the sinuses, but also alterations that could be discovered neither clinically nor by rhinologic examination with the same precision. He called attention to the technic of Hirtz, who seeks a complete horizontal view of the skull by a maximum deflection of the patient's head. Two poses are taken from the same axis; one anterior, a vertex chin plate, the other posterior, a chin vertex plate. For the former the patient is placed horizontal in a ventral position, with the head fixed in forced extension, the rays coming from the point in the median plane opposite the external auditory meatus. In the latter the patient lies on his back, the head immobilized in hyperextension, with the plate beneath the vertex. Slight shifting of the position of the tube permits the study of special areas.

Worms is persuaded that disease of the posterior sinuses will be found much more frequently than heretofore by this form of examination; permitting of earlier and more successful intervention, by shrinking of the mucous membrane, the excision of obstructing bone or curetting of the anterior and posterior ethmoid. This will apply to cases of inflammatory edema of the orbit with exophthalmos and chemosis, and to beginning optic neuritis. To illustrate the value of improved radiography, nine cases were reported. One was of incomplete oculomotor paralysis. Curetting of the posterior ethmoids and removal of the anterior wall of the sphenoid brought recovery.

2. A young soldier complained of bilateral amblyopia. V. R. 1/10; L. 3/10. Conjunctival redness and lacrimation. The optic discs were hyperemic and indistinct, especially in the right eye. The ethmoid was obscured more on the right side. Shrinking of the mucous membrane and catheterization were followed by improvement in all respests.

3. A gendarme with amblyopia progressive several months presented optic atrophy with hazy discs, pale in the temporal segment, and vision reduced to 1/50 and 1/100, central scotoma. The maxillary and ethmoidal sinuses were clouded, the sphenoids normal. Excision of the head of the turbinate revealed no pus but only thickened mucus. Headache was relieved but no improvement of vision occurred in 4 weeks.

4. A young recruit gave a history of bilateral amblyopia for several years following grippe. V. R. 1/10; L. 1/20. The radiogram of the ethmoid showed clouding on both sides. The sphenoid was similarly affected. No treatment.

5. Wound of face by a shell fragment was followed by progressive amblyopia in the left eye. V. equal 1/20. The left disc was pale and hazy, the visual field contracted. Radiography showed foreign body situated in the posterior external portion of the left ethmoid.

6. A man had suffered several months from recurring attacks of conjunctivitis lasting five or six days, with lacrimation and photophobia but without secretion. With such an attack there was swelling of the orbit, exophthalmos and suborbital pain, along with nasal discharge. There was clouding of the right frontoethmoidal sinus. Shrinking by cocain adrenalin, catheterizing the frontolacrimal canal, bleeding from the right temple and warm moist dressings produced improvement in 24 hours. There were some opacities in the vitreous.

7. A young soldier had for six months keratoconjunctivitis of the left eye, with intense lacrimation and frontal headache. Radiography showed the left ethmoid slightly clouded. Cocainization, inhalations of eucalyptol and cauterization of the left turbinate brought rapid improvement and cure in 12 days, altho local treatment to the eye had been of little benefit. Many cases of keratoconjunctivitis of nasal origin have been observed.

8. A young soldier presenting mucocele, apparently frontoethmoidal, progressive and with deviation of the eye down and out, had been operated on eight years before, but presented a fistula in the scar. A stylet was made to penetrate a diaphram between the middle turbinate and the external nasal fossa. A syrupy yellow fluid escaped, and two days later the fistula dried up. The radiogram showed absence of the frontal sinus, but an enlarged ethmoidal sinus penetrating the inner wall of the orbit and prolonged upward to the region of the frontal.

9. The patient, aged 20, presented voluntary exophthalmos of the left eye after fracture of the orbit by kick of a horse. The eye protruded directly forward. There was homonymous diplopia in part of the left field, with the image more elevated and slightly inclined outward. Paresis of the inferior oblique muscle. Vision normal. Radiography during protrusion of the eye showed a clear area indicating the forcing of air into the tissues.

Discussion. Dr. Velter called attention to another class of cases where both rhinologic and radiographic examination were negative, in sinuitis without pus or ocular symptoms. The insistence of the ophthalmologist upon exploration of the sinuses reveals the disease and causes rapid improvement. In a case of retrobulbar neuritis of this kind, resection of the turbinate allowed the extrac-

tion of a polyp followed by rapid improvement.

DR. MORAX remarked that the plates presented showed the important differences of transparency of the sinuses, which was rarely attained in the usual position of the head.

Flexible Probes for Lacrimal Obstruction.

DRS. A. POULARD and E. HARTMANN believe that the special difficulties in passing sounds thru the lacrimal canal in certain cases and the inferior results obtained in these cases, depend on projections of the walls that the rigid sound cannot pass. On this account they have resorted to flexible sounds, which were easily passed thru into the nose. In this way much better results were obtained. Such experiences have lead them to the habitual use of flexible sounds, which they now prefer in almost all cases. They also use them when the passage has been reestablished by cutting the stricture. The catheterization of the lacrimal duct in this way is made less brutal. A silver probe is used for the first passage after division of a stricture, but subsequently only the soft sounds are used. These are of two kinds, those of rubber and those of whalebone.

Complete Color Blindness with Anomalies of the Macula.

DR. E. VELTER presented a young man of 24, whose defect of vision had been noticed at four years old and had slowly increased. He seemed otherwise healthy. A sister was said to have the same trouble, otherwise the history was negative. The general appearance of the eyeballs, lids, orbit and face was normal. No disturbance of ocular movement. Pupils equal and normal in size and reaction. The media were clear, fundus and vessels normal except the veins slightly large and the disc rather gray. But in the macula of each eye there was a zone a little larger than the disc, kidney shaped in the right, circular in the left, of light red color, nonpigmented, with a sharp gray margin but without evidence of atrophy or pigmentation. The visual acuity was R. 1/8; L. 1/6, with correcting lenses plus 0.75 sph. The visual field was concentrically contracted 30 degrees, but there was no scotoma. The ocular tension was normal. Tests with the Holmgren wools showed no power to distinguish colors. There was photophobia so that the patient constantly used dark glasses. In reduced light and with the same time for adaptation, the patient saw things much more quickly and more clearly than a normal individual.

Ophthalmoscopic Lesions From Contusions of the Eyeball.

DR. E. VELTER illustrated such lesions with the projection apparatus. He thought the terms applied to inflammations of the deep membranes of the eye such as chorioretinitis and proliferating retinitis should not be used in connection with these lesions. Without prejudging their exact nature or mechanism, he wished to pass in review the most characteristic ophthalmoscopic appearances observed in 18 autochrome reproductions of fundus sketches. The most common changes were spots of chorioretinal atrophy, abundant pigment masses towards the periphery and equatorial region, and also at the posterior pole and macula. With these were sometimes retinal detachments of greater or less extent, various forms of rupture of the choroid crossed by retinal vessels that remained intact. There was one case of circular rupture of the macula. Some lesions resembled proliferating retinitis, masses of bluish white or mother-of-pearl appearance extending into the posterior portions of the vitreous, hiding the retinal vessels and optic disc. All these lesions may be recognized as arising from traumatic hemorrhage; they have nothing in common with inflammatory disease. Finally a constant ophthalmoscopic symptom is decoloration of the disc, indicating atrophy of very slow progress, and proportioned to the depth and extension of the chorioretinal lesions, a late progressive regeneration following the retinal changes or possibly vascular lesions.

Discussion. DR. POLACK after such injury had observed with the Gullstrand binocular ophthalmoscope a zone of edema of the retina, dark gray in color, which in 5 or 6 days began to be absorbed. Absorption progressed

from the periphery toward the center, disclosing underneath a hemorrhage, which, after some weeks, was absorbed leaving an elongated cicatrix with fringed extremities of a yellow orange color. This remains unchanged after two years.

Aqueous Humor in a Case of Seclusion of the Pupil and in Aniridia.

Drs. Magitot and Dautrevaux reported two cases with observations on the aqueous. The first patient was a man of 70, with complete seclusion of the left pupil, deep anterior chamber and ballooned iris. There had been no recent inflammation. T equal 42. Puncture of the posterior chamber thru the limbus yielded some aqueous, and puncture of the anterior chamber made opposite the pupil. Five weeks later this was repeated. Thirty-five minutes after the first puncture it was also repeated. The amount of fluid obtained varied from 4 to 50 drops. Thirty-five minutes after the first puncture, however, the quantity obtained from the posterior chamber was very small. The amount of albumin in the first specimen was above the normal, and was substantially the same in the second, somewhat increased; it was the same in the anterior and posterior chamber, indicating that the fluid mixed thru the iris.

The second case was of a girl of 14 with double congenital aniridia and anterior polar cataract. The anterior chamber was deep and the puncture furnished 12 drops. After puncture the anterior chamber reformed slowly; only after 45 minutes it approached previous depth. After 4 days puncture furnished 15 drops, and again after 45 minutes 7 drops. The liquid after the first puncture contained more albumin.

Trachoma in Annam.

Dr. Duclos reported on the thesis of Dr. Talbot dealing with this subject. The latter had examined 13,500 students of 6 to 15 years of age. About a third suffered from trachoma, the proportion increased with the density of population in the valleys and sandy coasts. It is not diminished to an altitude of 1,800 meters.

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SCISSORSMAGNET EXTRACTION.

The magnet extraction of fragments of steel from the eye is only possible where the magnetic attraction is greater than the resistance of the tissues to the passage of the foreign body. The endeavor to increase this attraction has led to the use of large magnets, as Haab's giant magnet, the ring or "innerpole" magnet of Mellinger, the Volkmann and Lancaster types, the introduction of the tip of the hand magnet into the eye, or attaching to the magnet a steel probe, spatula or forceps that would act as an extension of the magnet.

To lessen the resistance offered by the tissues is just as effective as increasing the magnetic force. To lessen tissue resistance an opening is cut in the sclerocorneal coat, when the wound thru which the foreign body entered is not available for its exit. For this reason care is taken with the giant magnet to keep the particle of steel in the vitreous and aqueous humor, the parts that offer the least resistance as it is drawn forward, and to avoid drawing it into the lens, or the ciliary processes or iris. But, as from the first, all statistics have shown a certain number of failures to extract foreign bodies, proven magnetic, because the tissues or exudates in which they were embedded offered too much resistance for the magnet extraction to overcome.

It seems worth while to call attention to a method of diminishing this resistance that has been too much neglected. We do not hesitate to cut a hole in the sclera, to lessen its resistance to the response of a piece of steel to the magnetic attraction. But too often no attempt has been made to cut a channel thru deeper structures, scar tissues or exudates that make an effective resistance. Apparently it does not occur to most operators to attempt to divide the deeper obstacles down to the particle of steel. They seem not to know that a very effective means of doing this is always at hand.

In 1909 the writer reported to the Section on Ophthalmology of the American Medical Association two cases in which this method was effective, after efforts of powerful magnets had failed to pull the foreign body out of the structure in which it was embedded. In the hands of the writer the method has never failed, and the few others known to have tried it properly have been equally successful. It would seem that ignorance of such a method and of its efficiency, is the only possible explanation of its neglect.

The method consists of introducing thru the opening made in the sclera the points of small scissors closed; and placing them as near as possible to the known location of the foreign body. *When this has been done the rounded end of the magnet core is brought in contact with the scissors at the point where the two blades are connected. Then the current is turned on and the scissors used as scissors, making short repeated snips,* until the bit of steel comes in contact with the blades, when they are withdrawn still in contact with the magnet, bringing the steel with them.

The scissors should be small tenotomy scissors. In snipping with them the points need be separated only 2 or 3 mm. They should be held steady, and the current not turned off until magnet, scissors and steel have been drawn from the eye. The scissors give an effective extension magnet; as illustrated in the case published on page 916, in which they were not used as scissors; and the handles make them a manageable one. They perform this function after they have made the channel thru the tissues to the foreign body; but the important point is that they make that channel.

The foreign body is embedded in soft tissues which give when the magnetic metal is pulled toward the magnet. This giving before the magnetic force causes the pain that is relied on for the diagnosis of intraocular foreign bodies with the giant magnet. When the steel is thus pulled toward the points of the scissors used as an extension magnet, the tissues between it and the scissors are pressed upon the points of the scissors and drawn between them as these are separated. Each snip divides a certain portion of the tissue obstacle, and then a new portion is drawn between the blades until a channel is made. Each time the magnet attraction pulls between the blades exactly the part of the tissue that ought to be cut; and thus the channel is guided exactly to its objective.

When a knife is used as a magnet extension, it is likely to be thrust to one side of the foreign body and is useless to divide the intervening tissue, unless its edge is turned in just the right direction, and the blade used with a sawing motion. Even then it is not very effective. We all know how difficult it is to cut accurately loose tissues like the conjunctiva or iris with a knife, as compared with the scissors. Even for too short an incision in the sclera, we commonly lay the knife aside and resort to scissors to lengthen it. The writer, like others, has failed to accomplish his purpose when using a cataract knife as a magnet extension.

The efficiency of the scissors as a magnet extension can be easily demonstrated on a pig's or sheep's eye by "planting" the head of a small tack in it; or embedding in a small mass of loose absorbent cotton. One who expects to be appealed to for the removal of such foreign bodies should practice the operation in this way. Such practice will not only give familiarity with the technic; it will give a proper respect for the efficiency of the method and fix it in the memory where it will be available when it is needed to meet such an emergency.

E. J.

INTERNATIONAL OPHTHALMIC LITERATURE.

In a sense all literature is international. The student of any race or language, by studying it out with the aid of teachers and dictionaries, or by use of a translation can utilize it. The number who have more or less command of several languages continually increases with travel and the extension of educational facilities. Reviews and abstracts, bibliographies and year books are rapidly creating a world literature in each branch of science or art. This kind of world literature is rapidly developing for ophthalmology.

The new opthalmic journal to which attention is called by an esteemed correspondent (p. 940) is a new move in this development. The four Scandinavian countries, speaking closely allied languages, have very few oculists whose reading or speaking knowledge of language is confined to these. But outside of these countries are many oculists ignorant of the Scandinavian tongues, who will be glad to profit by the investigations and teachings of the

famous leaders in ophthalmology who live in Denmark, Norway, Sweden and Finland. It was a happy thought to bring to these the best products of their thought in the widely known scientific languages, English, French and German, each writer choosing according to his preference or proficiency the language in which he will set forth his thought. The publication of *Acta Ophthalmologica* will bring to the notice of ophthalmologists thruout the world how much of the best literature relating to our specialty comes from these countries. Certain nations have levied a sort of voluntary tribute on others by the process of publishing their scientific discoveries and inventions, and much of this tribute has been paid by the Scandinavians. By this bold expedient of adopting the more widely spoken languages, a Scandinavian journal will secure for these nations the recognition of their scientific contributions to the world literature.

The place attained in the world literature of ophthalmology by this Journal in the last six years is very gratifying. Each year a relatively large proportion of its new subscribers has been drawn from other countries; and there has been a similar growth in the number and importance of the scientific papers from other parts of the world that have sought it as a medium of publication. A glance over this volume shows twelve communications from writers of other countries; and there are now on hand for publication in the new year valuable papers from writers living in Asia, Africa and Europe, as well as in America. In every direction the movement for a world literature of ophthalmology goes steadily forward.

E. J.

AN OFFER TO SUBSCRIBERS.

In the United States there are at least twice as many graduates in medicine who practice ophthalmology as an important part of their work, as there are subscribers for the AMERICAN JOURNAL OF OPHTHALMOLOGY. Those who do read the JOURNAL know that the others ought to have it. They can help their colleagues and help themselves by bringing this fact to the attention of those who are not taking the JOURNAL.

To impress this point we offer to send two copies of this journal for the next year and two copies of the Ophthalmic Year Book for 1924, one each, to an old subscriber, and one to a physician practicing ophthalmology, whose name is not now on our subscription list, for the price of ten dollars each, twenty dollars, sent with the subscription before December 31. If the subscription is received before December 1, the new subscriber will also receive the December number free.

BOOK NOTICES.

Xerophthalmia in Denmark, 1909-1920, with an English Summary. By **Olaf Blegvad,** M.D., Assistant in Ophthalmology at the Hospital, Copenhagen. Paper, 170 pages, 18 ill. Oyldendalske Bookhandel. Copenhagen.

Xerophthalmia and keratomalacia are rarely seen in America; a few cases are found in the larger cities. Denmark is particularly well situated for statistical studies regarding these diseases. Not only is its restricted area so situated that practically all cases come under the observation of well trained oculists, but the sharply marked seasons and the definite food variations of animals and human beings make it possible to draw conclusions of positive value with regard to the share that diet has in its etiology. To such a country the rest of the world must look for light on its pathology and treatment.

The opportunities thus afforded have been appreciated and utilized by Blegvad, who brings together in this monograph a good resumé of the literature referring to these diseases, the accounts of recent investigations of vitamins, particularly the fat soluble vitamin A, and careful study of the cases of keratomalacia and conjunctival xerosis occurring during the period named. These latter number, keratomalacia in children 434 cases, and in adults 19. Of xerosis of the conjunctiva there were 148 cases. Blegvad finds the evi-

dence conclusive that the conditions are due to deficiency of fat soluble vitamin A.

The illustrations are diagrams representing the seasonal incidence of the cases, the number of them for each year, the ages of the patients, the variations in diet, particularly in the making and use of butter substitutes, poor in this particular vitamin; the progress of epidemics, the number of deaths, etc., with the numerous tables they present in condensed form, very easy to consult and grasp, a large number of exact observations.

This book is printed in Danish, except the three page summary in English. That summary with the illustrations, teaches the important conclusions arrived at. The work must at once take its place as a leading authority on this class of diseases. The important investigation it presents will be made directly available to our readers in a paper by Blegvad to be published in this journal early next year.

E. J.

Government Ophthalmic Hospital Madras, Report and Statistics for 1922, **R. E. Wright,** Major I.M.S., Superintendent. Paper. Quarto 50 pages, 16 ill. Madras: The Government Press, 1923.

This publication grows from year to year in size and importance. The administration report occupies 16 pages; the remainder is given to cases, articles, and statistics dealing with the scientific aspects of ophthalmology. These are contributed by 9 writers connected with the hospital and the Elliot School of Ophthalmology. Cataract operations occupy 6 pages, dealing with the points arising in a service including 1571 extractions, by the usual Madras operation, with or without iridectomy, Barraquer's operation, and expression by the Smith method.

Of sclerocorneal trephinings 187 were done, about 100 less than the year before. This drop is accounted for by about 100 iridectomies and iridotomies (Curran operation) additional to the number done the preceding year; 307 operations were done on the lacrimal apparatus, and 107 excisions of the tarsal plate for trachoma.

Of keratomalacia there were 50 cases, 45 of them under 6 years of age. Treatment with fresh liver juice with orange juice, with sugar to make it palatable, was used in 35 cases, and found as good or a little better than treatment by cod liver oil; the patients gaining from one to ten pounds according to their stay in the hospital, which averaged one month. In tabulated form the main facts regarding ten cases of *bilateral enlargement of the lacrimal gland* are presented. The patients varied in age from 4 to 50 years and the condition had existed from 2 weeks to 5 years. Operation was done on 7 cases, and the pathologic conditions found varied widely. In 2 cases the glands were found "normal"; one was a case of lymphosarcoma. None were reported tuberculous, and in 6 of the 10 of the general health was good.

The illustrations are chiefly reproductions of photographs of patients. They represent rare and striking conditions. These reports are worth having. They are placed on sale at many points in India, the United Kingdom and Continental Europe, but nowhere in America. They may be obtained thru T. Fisher Unwin (Ltd.) 1, Adelphi Terrace; or W. Thacker and Co., 2 Creed Lane, London.

E. J.

CORRESPONDENCE.

A New Journal.

To the Editor:

You will be interested to learn of a new venture in ophthalmic journalism. The ophthalmologists of the four Scandinavian countries, Denmark, Finland, Norway and Sweden have joined forces to publish the "Acta Ophthalmologica". What makes this new journal of especial interest and value to American ophthalmologists is that the articles and reports will be published, not in the Scandinavian languages, which so few of us are able to understand, but in English, German and French.

The first number has just appeared and contains the following articles:

Alkio, V. V.: Heredodegeneratio Maculae Centralis Retinae bei vier Geschwistern.

Bentzen, Chr. F.: On making the conjunctival flap in Elliot's operation....
Gertz, Hans: Nouvelle représentation du grossissement fourni par les instruments d'optique oculaires.....
Holm, Ejler: Central and eccentric fixation .....
Holm, Ejler: Coloboma corporis vitrei..
Holm, Ejler: An anomaly of the papilla nervi optici with arteria hyaloidea persistens .....
Lundsgaard, K. K. K.: Tuberculosis conjunctivae .....
Lundsgaard: K. K. K.: The eye-clinique in Helsingfors .....
Norrie, Gordon: Target, with an illustration of a cataract operation.....
Ronne, Henning: The effect of advancement sutures upon the elevation of the visual axis.....
Ronne, Henning: False movements appearing during vision through spectacle glasses .....

Society Reports.

The ophthalmological society of Copenhagen .....
Verein der Augenärzte Finnlands.....

Book Reviews.

Blegvad, Olaf: The Xerophthalmia and its appearance in Denmark during the years 1920-1921.....
Birkhäuser, R.: Scalae typographicae...

They cover a wide range of subjects of ophthalmologic interest, and they present in my opinion a very high standard of scientific merit. Most of the articles in the present number are English. I need not call your attention to the fact that this journal will represent the countries of such leaders of ophthalmology as Tscherning, Gullstrand, Schiötz, Holth, Rönne and Lundsgaard. The journal in which these men and their colleagues publish their scientific works is certain to be one of value and importance. American oculists who are interested in the progress of ophthalmology will do well to subscribe for this journal and give it a wide circulation in this country. The yearly subscription is six dollars and should be sent to the Editor, Dr. K. K. K. Lundsgaard, Lundsgade 6, Copenhagen, Denmark.

HARRY FRIEDENWALD.

Baltimore, Md.

Use of Hyoscin.

To the Editor:

In the July number, Dr. Samuel W. Green reports a case of "Hyoscin Idiosyncrasy" which I fear is apt to deter men in the use of this very valuable mydriatic.

Hyoscin has served me as it has some other men in this country, notably the late Wendell Reber, as a most valuable mydriatic. However, I think all men with any considerable experience with this medicament will agree that hyoscin is no remedy to be placed in the hands of the laity. If it is, certainly a one-half per cent solution, which is practically 1 to 1,000, it is too strong a solution. It may be, that because I say this remedy is not for home use some ophthalmologists will not use it. However, it is little more dangerous than a cocain solution, which we certainly *would not* prescribe for home use.

This letter is written because I am certain that the very great value of hyoscin as a mydriatic is not appreciated; and also because when the average oculist wants to try hyoscin, he thinks it can be used in the same manner as atropin.

I hope that you may see fit to publish this letter or comment on it, because just such articles as "Hyoscin Idiosyncrasy" have a strong tendency to restrict the use of hyoscin, which after a good many years use I have learned to value most highly.

G. HENRY MUNDT.

Chicago, Ill.

ABSTRACTS

Sichel. Socalled Glass-Workers' Cataract In Other Occupations. Brit. J. Ophth., 1923, v. VII, p. 161.

The author restates the observations of other investigators, that this type of cataract is ten times more frequent in workers before furnaces than other classes of people. 1. That the luminous rays are not the cause of the disease. 2. That ultraviolet radiation is not the cause, in so far as any direct action upon the lens is concerned. 3. That the evidence is strongly in favor of the view that heat is the active agent. 4. That it is uncertain whether the heat radiation acts directly on the substance of the lens, or indirectly by disturbing the nutrition of the lens. 5. That possibly ultraviolet radiation may play some part in the causation by indirect action on the nutrition of the lens.

Two case reports accompany the contribution. One, in a machine man, aged 38 years, the second in a laundress, aged 64 years. Both had been exposed in their particular work for more than 15 years. Both possessed typical bilateral posterior central cortical opacities. The second case may be debatable owing to age and exposure to only moderate degrees of heat.

To the list of iron smelters, gold smelters, chinamakers, tinplate millmen and glass workers may be added machinemen and laundresses. As suggested by Cridland, the author believes that "ray cataract" is a more comprehensive term for the condition.

D. F. H.

Gibson, J. Lockhart. Siderosis. Brit. J. Ophth., v. VII, 1923, p. 174.

Siderosis may be defined as a coloration of the eye by fine rust particles in suspension or solution in the fluids of the eye, associated with a consequent mild but advancing inflammatory state of the uveal tract and gradual destruction of sight, unless the particle of steel can be removed before the inflammatory process has advanced too far.

Two very excellent case histories accompany the paper. They well illustrate the danger of subsequent inflammatory disturbances due to the rusting of the steel. First, that pieces of steel near vital tissues should not be left if they can be extracted. Second, that if it proves impossible to remove a piece of steel from the fundus with a giant magnet soon after the injury, the best time of course, a further attempt should be made when siderosis supervenes, because the onset of siderosis probably loosens the piece of steel in its bed and makes it more likely to move forward when the giant magnet is applied. The cases referred to, indeed, suggest this conclusion.

D. F. H.

Wright, Major R. E. Radiography in Optic Atrophy with Special Reference to Pituitary Disease. Brit. J. Ophth., v. VII, March, 1923, p. 123.

The author urges the importance of radiography as an aid in obscure cases of optic atrophy. This is particularly true in pituitary cases, which show scanty glandular symptoms. During the preceding two years, eight cases were observed in which trouble in the neighborhood of the sella was suspected out of 40,000 patients. Three did not show trouble localized to the pituitary region, and were therefore omitted from the series.

The first, was a case of tumor in the pituitary region giving rise to marked neighborhood symptoms and total blindness with hypopituitarism. The second, tumor of the pituitary region, optic atrophy the chief feature, inconspicuous glandular symptoms, suggestive of former hyperpituitarism followed by dyspituitarism. The third, definite enlargement of the sella, few glandular symptoms, characteristic fields. The fourth, enlargement of the sella with definite primary hypopituitarism and characteristic nerve involvement, dystrophia adiposogenitalis. The fifth, optic atrophy with changes in the pituitary region revealed by radiograph, inconspicuous glandular symptoms suggestive of hyperpituitarism followed by dyspituitarism.

Five radiographic illustrations and six perimetric charts accompany the contribution.

D. F. H.

Albert-Cremeiux and **Bianchi, H. Significance of Inequalities of the Pupil.** Gaz. des Hôp., 1923, v. 96, p. 765-769; 801-804.

The paper does not deal with anisocorias due to trauma, drugs, glaucoma, etc., but only with those due to lesions or dynamic troubles of the motor nerves of the iris. After a historic review and an anatomic and physiologic discussion, the authors take up the clinical study. Anisocoria may be due to either miosis or mydriasis. These may be: (a) paralytic miosis (sympathetic paralysis), (b) spasmodic miosis (excitation of oculomotor), (c) paralytic mydriasis (paralysis of oculomotor), or (d) spasmodic mydriasis (excitation of the sympathetic). Five questions must be answered: (1) Is there anisocoria, (2) which is the abnormal pupil, (3) is it simple or complicated, (4) what is the mechanism and (5) what is the etiology?

1. If this is not distinctly evident, the incident light must be equalized, the eyes must be in repose (if necessary in a dark room), the patient must look straight in front of him, and if necessary the difference must be emphasized by the use of equal amounts of miotics or mydriatics.

2. Sometimes this is difficult, and can be settled only after a thoro examination of the chest and nervous system. Sometimes the anisocoria is inconstant, and sometimes both pupils are abnormal.

3. There are three possibilities: (a) anisocoria associated with reflex or visual troubles, such as that due to blindness or the Argyll Robertson pupil; (b) anisocoria associated with other symptoms from the cervical sympathetic, such as the syndromes of Brown-Sequard, Claude Bernard-Horner, Dejerine and Souques, and Sergent; (c) simple pupillary inequality. A thoro knowledge of these syndromes will aid in locating the lesion.

4. Spasmodic myosis is found in acute meningitis, tubercular meningitis, and hemorrhage into certain nerve centers or their vicinity. Paralytic mydriasis if unaccompanied by reflex troubles is difficult to diagnose from sympathetic anisocoria, but if complete it is accompanied by abolition of the pupillary reflexes. In addition, the following signs are present: The pupillary dilatation is of a medium degree, the anisocoria increases in the light and decreases in the dark, and there is present an irregularity of the pupil. Paralytic myosis and spasmodic mydriasis show the following characteristics: (a) The accommodation reflex is intact, (b) the inequality is increased in the dark and decreased in the light, (c) other sympathetic troubles are present, and (d) the mydriasis is much more pronounced than in paralysis of the motor oculi. By the use of collyria it is found: (a) atropin and cocain increase paralytic mydriasis and eserin decreases it (unless the lesion is beyond the ciliary ganglion). (b) In spasmodic mydriasis, atropin causes dilatation ad maximum, cocain has no effect, and eserin little. (c) In spasmodic myosis, atropin dilates as normally while cocain and eserin have no effect. (d) In paralytic myosis, eserin contracts ad maximum, atropin dilates a little, and cocain does the same (unless the lesion is beyond the cervical ganglion).

In addition to this anatomic theory, there is the reflex theory of Chauffard and Loederich based on the Pflüger law of unilateral reflex, and the toxic infection theory of Massalongo, which denies anatomic and reflex trouble, basing the condition on a simple inhibition of the bulbar centers by toxins.

(5) A. Anisocoria with reflex or visual troubles. This may be due to blindness, infections of the central nervous system, such as diphtheria and epidemic encephalitis (accompanied by troubles of accommodation and of the extrinsic ocular muscles) or syphilis. The latter is the usual cause, and then there may be present also irregularity

of the pupil, loss of reflex to light and to accommodation, either or both.

B. Anisocoria without reflex or visual trouble. This may be due to intracranial conditions such as hemorrhages, tumors, meningitis, etc., but is usually due to lesions of the cervical sympathetic. These include toxic, anaphylactic and reflex troubles. But most of them are due to anatomic lesions of the cervical sympathetic at different planes—the bulbar center, the spinal center, the rami communicantes, the nerve trunks or the ganglia. The accompanying symptoms aid in locating the lesion. In general, a case of anisocoria should suggest cerebromeningeal syphilis or tuberculosis.

C. L.

Koby, F. E. Heterochromia and the Variant Eye of Domestic Animals. Ann. d'Ocul., 1923, v. 160, p. 119.

The color of the iris depends on (a) the light used and the direction of the rays, (b) the density of the stroma, (c) the amount of pigment present, and (d) the dilatation of the pupil (to a certain extent). There are three types of human pigment cells: (1) The negroid, compact cells, few ramifications and dense granules. (2) The mongolian, more numerous cells, very delicate, with delicate branches, and less dense granules. (3) The European, very delicate cells, delicate branches, few granules, of unequal size. In animals, the pigment cells are so characteristic, that it is possible to tell the species from this alone. Domestic animals have less pigment than wild ones of the same species.

The term variant may designate either an uncertain coloration of the iris, or a condition such as is found in the horse, where there is a whitish circle present. Under the first definition may be included either an abnormal amount or decrease of pigment. The author recognizes four tyes of heterochromia: (1) Congenital, accompanied by malformations. (2) Degenerative, leading to cataract. (3) Hyperpigmentation. (4) Hereditary mosaic, which is based on a slight depigmentation.

Heterochromia is frequent in guinea pigs but rare in rabbits. Cats often have blue eyes and heterochromia. The latter is present in those varieties which have been domesticated for a long time, such as the angora. Heterochromia of dogs is well known, as is that of the horse, and the sheep. But no case of heterochromia in cattle has ever been reported. Comparing the pig with its ancestor, the wild boar, the former shows the stigmata of domestication — fat, depigmentation, shortening of the snout, etc. The author describes the differences in the eyes of the wild boar and the pig, consisting chiefly of less amount in the latter.

C. L.

Birnbaum, H. Nonprofessional Nystamus Resembling Miners' Nystagmus. Ann. d'Ocul., 1923, v. 160, pp. 109-119.

Man, age 39, albinotic hair. His mother gives the history of several abortions. Seven brothers and sisters died in infancy. Poor vision in the right eye discovered at the age of sixteen. Tabetic symptoms and positive Wassermann-Bordet three years ago. Reaction to light and accommodation abolished at that time.

At the present time, he has a partial ptosis of both upper lids, more in the left than the right. When the lids are closed, the eyes are quiet, but at the slightest attempt to open them, the eyes begin to tremble very rapidly, the excursions being increased with abduction and decreased with adduction. The eyes moved in abduction to the extreme limit, but practically all other movements were restricted. The characteristic feature of the case is a rotation of the eyes outward, when the lids are raised. Functional tests of the labyrinths show the left is normal but the right more irritable than normal. (This ear is deaf). The nystagmus is horizontal, averaging 120 a minute, increased on raising the lids and lateral movements of the eye. When not very rapid, it is rhythmic, otherwise undulatory. This movement of the eyes occurs only when the lids are raised by the levators—not when raised by the fingers. The analogy with miners'

nystagmus is the causation of the nystagmus in the present case by the raising of the lid, while in the latter, it is due to the raising of the eyes themselves. C. L.

Garrow, Alexander. A Statistical Enquiry into 1000 Cases of Eye Injuries. Brit. J. of Ophth., 1923, v. 7, p. 65.

This study was made from the records of the Ophthalmic Department of the Glasgow Royal Infirmary. The contribution contains six tables. First, showing various classes of the community. Second, frequency of the different kinds of eye injuries in 1000 cases. Third, causes of the accident in the cases requiring enucleation. Fourth, the nature of the injury in the cases requiring enucleation. Fifth, cases of enucleation arranged according to occupation. Sixth, a general classification of the 1000 cases of eye injury.

70.7 per cent were occupational, 29.3 percent nonoccupational. Of the 516 occupational cases, there occurred in engineering workers 260, coal miners 173, metal workers 83. Among the nonoccupational group, 17.7 percent of the population were in children under aged 15 years. The enucleation percentage was 21.8 in nonoccupational and 12.02 in occupational. The higher rate was due to severe contusion injuries in the adult and severity of eye injuries in children. The low enucleation rate were in infected corneal abrasions, burns and wounds. The nonoccupational group shows that the incidence of penetrating wounds in children was almost twice that of adults; while severe contusion injuries were four times more frequent in adults than in children. D. F. H.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. They should be sent in by the 25th of the month. The following gentlemen have consented to supply the news from their respective sections: Dr. Edmond E. Blaauw, Buffalo; Dr. H. Alexander Brown, San Francisco; Dr. V. A. Chapman, Milwaukee; Dr. Robert Fagin, Memphis; Dr. M. Feingold, New Orleans; Dr. Wm. F. Hardy, St. Louis; Dr. Geo. F. Keiper, LaFayette, Indiana; Dr. Geo. H. Kress, Los Angeles; Dr. W. H. Lowell, Boston; Dr. Pacheco Luna, Guatemala City, Central America; Dr. Wm. R. Murray, Minneapolis; Dr. G. Oram Ring, Philadelphia; Dr. Chas. P. Small, Chicago; Dr. John E. Virden, New York City; Dr. John O. McReynolds, Dallas, Texas; Dr. Edward F. Parker, Charleston, S. C.; Dr. Joseph L. McCool, Portland, Oregon; Dr. Richard C. Smith, Superior, Wis.; Dr. J. W. Kimberlin, Kansas City, Mo.; Dr. G. McD. Van Poole, Honolulu; Dr. E. B. Cayce, Nashville, Tenn.; Dr. Gaylord C. Hall, Louisville, Ky.; Dr. Edward D. LeCompte, Salt Lake City.

DEATHS.

Dr. Lewis S. Dixon, Boston, aged 77, died Aug. 5th, of cerebral hemorrhage.

Dr. Charles Killick of Bradford, England, died recently of septicemia.

Dr. Herbert Harlan, Baltimore, aged 67, died Aug. 16, of heart disease, while playing golf. In 1913 he was sent by the Secretary of the Interior to the mountain counties of Kentucky to investigate the cause of trachoma. He was a member of the National Board of Medical Examiners.

PERSONAL.

Drs. Frederick A. Aylesworth, Carl E. Hill, M. Lyon and Walter W. Wright have been recently appointed as senior demonstrators in ophthalmology at the Univer ty of Toronto.

Dr. H. A. Brown of San Francisco has been making a trip to Boston, New York, Philadelphia, Washington and New Orleans, and expects to return to San Francisco about the middle of October.

Dr. Wm. A. Fisher gave an informal luncheon on September thirteenth at the Chicago Athletic Club, to about thirty guests, in honor of Dr. L. Webster Fox who was passing thru the city on his way home to Philadelphia. Dr. Fox had been spending his vacation in the Rocky Mountains.

MISCELLANEOUS.

The Perkins Institution for the Blind, of Boston, was left $5,000 under the will of David P. Kimball.

A new hospital for the treatment of trachoma has been opened at Rolla, Mo., by the U. S. Public Health Service.

A club has been opened at Budapest, the members and staff of which are blind. There is a library comprising more than 2,000 works, billiard rooms and chess rooms. Just how a blind man can get any enjoyment out of a billiard table is not explained.

The New York Institute for the Education of the Blind has sold the block on the east side of Ninth Avenue and Thirty-fourth Street, which it has occupied for nearly fifty years. The sale price was about $1,000,000.

The Eye Sight Conservation Council of America has announced that it is about to undertake a nation wide survey of eye conditions. A previous investigation by this organization indicated that in this country 25,000,000 persons gainfully employed have eye defects. The research program which has recently been adopted aims to discover the effect of incorrect vision on production. Among the objects of inquiry will be the extent of color blindness, the number of those blind in one eye, the number totally blind, hours lost due to eye accidents, equivalent wages for lost time, use of goggles, and the cost of eye protection service. —(Jour. A. M. A.)

The Secretary of the Illinois Society for the Prevention of Blindness reports that this is the first year in the history of Chicago when there has not been a single case reported of total blindness resulting from birth infection of the eyes. This is largely attributable to the stringent enforcement of the State law, which requires physicians and midwives to report immediately a "case of sore eyes." This Fall, the Society, together with the City and State health departments, is planning a special educational campaign among the midwives. Thru the courtesy of the Chicago Board of Education, the Society has special nurses on the field. These nurses go into the homes where children's eyes have been reported to be weak and ailing, and instruct the parents where to go for the best possible care and treatment. This treatment is given free if the parents are not able to pay.

Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in **heavy-face type.** The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is an abstract of the original article. (Bibl.) means bibliography and (Dis.) discussion published with a paper. Under repeated titles are given additional references to papers already noticed. To secure early mention, copies of papers or reprints should be sent to American Journal of Ophthalmology, 217 Imperial Building, Denver, Colorado.

BOOKS.

Ewing, A. E., and **Green, J.** Optotypes of Test Letters and Pictographs for Measuring Acuteness of Vision. 24 pages, 35 pl. A. J. O., 1923, p. 789.

Herbert, H. Operative Treatment of Glaucoma. 160 p. 31 ill., 1923. New York. William Wood and Co. London, Baillière Tindall and Cox. A. J. O., 1923, v. 6, pp. 784-788.

International Clinics, Vol. ii, 33rd Series. 310 pages, 61 ill., 2 col. pl. A. J. O., 1923, v. 6, p. 789.

Lapersonne, F. de, and **Cantonnet, A.** Neurology of the Eye., 416 p. 113 ill. 4 pl. Paris, Masson et Cie., 1923. A. J. O., 1923, v. 6, p. 788.

Ovio, G. G. B. Morgagni nelle Storia dell' Oculistica. 286 p. 6 pl. and portrait, 1923. Milan, Vallardi. Brit. Jour. Ophth., 1923, v. 7, p. 443.

Terrien, F. Semeiologie Oculaire, La Calotte Corneo-scleral. 260 p. 144 ill., 1923. Paris, Masson et Cie. Lancet, 1923, Aug. 18, p. 334. A. J. O., 1923, v. 6, p. 788.

DIAGNOSIS.

Gertz H. Magnifying optical instruments. Acta Ophth., 1923, v. 1, pp. 3-26.

Gifford, S. R., and **Cassidy, W. R.** Some uses of the slit lamp. (8 ill.) A. J. O., 1923, v. 6, pp. 730-736.

Graves, B. Large lens of Gullstrand slit lamp. Brit. Jour. Ophth., 1923, v. 7, p. 446.

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